

OCTOBER
1953

for men who manage
**chemical
processing**

highlights

-drying nets 40% more
fuel, saves fuel 8
One of 9 "New Solutions"
appearing in this issue

ene yields effective,
Insecticides 26

This month's Materials sec-
tion contains 34 articles

by they control the
flow 64

and 15 other instrumentation,
control ideas in this issue

PUTMAN PUBLISHING CO., CHICAGO

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printing; hence more READER ACTION



Owens-Corning's
HAROLD BOESCHENSTEIN
PIONEER OF PROGRESS
— in glass fibers

Now... for Exacting Process Uses—

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"That's Interesting"

Texans are partial to muddy river

The disposal of waste products into a nearby river has created a rather unusual problem for the engineers at Dow Chemical Co.'s Texas Div. Evidently some of the materials coming from their plants have a tendency to settle out the mud and silt normally suspended in the river. Without the 'mud suspension' the river loses its chocolate tinge and acquires the blue-water appearance of the open sea. However, since several people have voiced strong sentiments about the color change, Dow has assumed the project of converting the Brazos river to its original chocolate hue. (*The Dow Texan*)

Process yields better results in printing on polyethylene

A new surface-treating process for polyethylene film is reported by its originator (Chester Packaging Products Corp., Yonkers, N.Y.) to increase ink adhesion and help solve the major problems of printing on this versatile material.

Of mice and . . .

That "better mouse trap" is presented by the Runway Trap Co. of Chicago as offering maximum safety — to the user, of course. Trap is set with a simple squeezing motion at its top. It automatically locks itself into position, yet quickly brings about the demise of Monsieur Rodent when he contacts the concealed trigger mechanism. So end "the best laid plans . . ." (*Design News*)

Psshhttt!! Frayed tempers saved

An Ohio manufacturer has developed an aerosol spray that counteracts the static charges that cause sheets of paper to stick together as they pass through the printer's job press. On cold or dry days now, the air in the printshop should have a normal color, rather than that "vocabulary-blue" tinge. (DuPont Product Information Service)

All-plastics room

In case you were too busy to notice, McCall's magazine for September pointed up the growing popularity of plastics with a spread on an all-plastics room. Everything from floor to ceiling and wall to wall is plastic, including upholstery, birdcage, and doorknobs. Over 100 plastics are represented.

Impaired clearance — 20 ft

All power transmission lines in a certain area of North Eastern Transvaal (South Africa) must have a minimum ground clearance of 20 ft. Rule was enforced evidently to safeguard the long-necked wild life (giraffes). (*Africa News*)

CHEMICAL PROCESSING

(CHEMICAL PROCESSING PREVIEW)

For MEN WHO MANAGE

Vol. 16

October, 1953

No. 10

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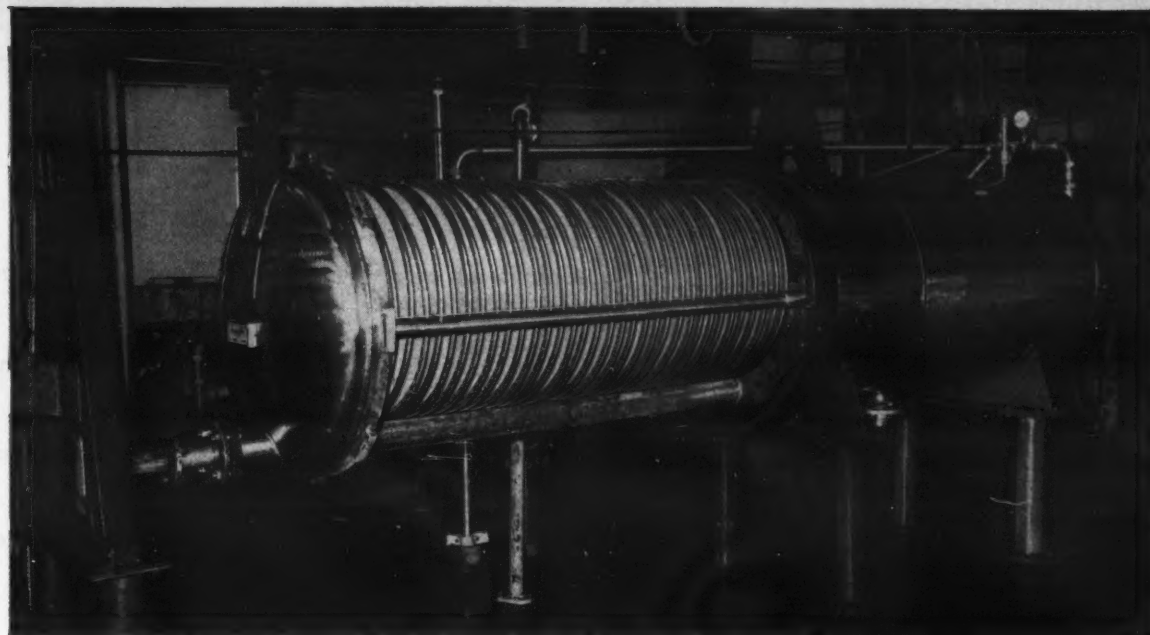
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The Niagara Style "H" Filter will filter liquids to high clarity, at rates up to 30,000 GPH.

It also gives you easy recovery or disposal of as much as 150 cu. ft. of solids at a time.

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CLEANED IN A FEW MINUTES

Cake discharge is faster than anything you've ever seen in a filter this big. Cakes can be blown dry in the filter, are then dropped into a discharge hopper simply by rapping the all-metal leaves with a rubber mallet. That's all there is to it.

The filter in the picture is opened, cleaned, and closed in less than ten minutes, by one man. It can be taken

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When inquiring check CP 3900 on handy form, pgs. 2-3

In this Issue

See you at the Chem Show



A good many thoughts are unquestionably concentrated at the moment upon the forthcoming 24th Exposition of the Chemical Industries to be held at Convention Hall in Philadelphia, November 30th through December 5th. Show attenders are speculating as to what they will see, and exhibitors are ironing out the last details of their displays.

If you've been plying the roads to New York City or Chicago alternately year after year to attend the Chem Shows, this'll give you a welcome change of scenery. It's our personal opinion that Philly's Convention Hall is far more suitable an exhibition ground than either NYC's Grand Central Palace or Chi's bygone Coliseum. We've seen them all. At any rate, the latest word has it that there will be more exhibitors and more space this year.

Next issue of CHEMICAL PROCESSING Magazine, the November issue, will contain a preview of as many exhibits as have completed their plans by publication date. By way of a "preview-of-a-preview", here are what some of the highlights look like at this early stage of the game.

Materials — Dispersant which affords refiners greater cracked stock straight run stock blends at reduced costs. . . **Ideas** — Engineering scale models of plants to assist with designing, construction and operation of proposed plants. . . **Instrumentation & Control** — Micro pump which can deliver 0.0001-0.1 cc/stroke with reproducibility of 0.04%.

Materials Handling — Balanced pneumatic conveying system up to 174' long and handling up to 280 tons/hr. . . **Corrosion Control** — Stainless steel tube fittings with Teflon sealing gaskets for instrumentation and small process lines. . . **Packaging** — Four-head net weigher for free-flowing materials giving speeds to 140 units/min.

For the Laboratory — Completely equipped mobile analytical chemical laboratory. . . **Processing Equipment** — Said to be the "first practical ultrasonic homogenizer". . . **Safety** — Complete line of emergency eye, nose and mouth-wash fountains. . . **Construction & Maintenance** — Carbonaceous filter aid insoluble in alkali and acid solutions.

See you at the Chem Show!

Dr. Bruce Smith

ASSOCIATE EDITOR

editorial highlights

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2. If you are looking for information on specific products, use the Product Directory "Quick-locator" for all types of materials, instruments, processing equipment, etc. This Product Directory lists everything in this issue, with page references — 226

3. If you want to subscribe to this magazine, see reader-qualification form opposite page — 3

Uses Grow for Ion Exchange

This editorial has been written at the request of the editors of CHEMICAL PROCESSING . . . and is authored by

James Boyd Smith
Research Chemical Engineer
The Permutit Company

Received his B.S.E. and M.S.E. degrees in chemical engineering from Princeton University, where he held the Textile Research Institute Graduate Fellowship. During World War II he was in the US Navy, assigned to the Manhattan Project. He is a member of the Society of Sigma Xi, ASTM Committee D-19, AICKE, and the ACS. Since 1947 he has been associated with The Permutit Company as a research chemical engineer engaged in work on general water treatment and various ion exchange processes.



ION exchange is not new, ion exchange in soils having been discovered in England around 1850. In about 1900 the first commercial use was made of this process, in zeolite water softening, to remove calcium and magnesium. Actually this particular process is still the largest commercial use of ion exchange. Early ion exchange materials, being organic, were not stable to acids or bases. Only in the last ten or fifteen years have stable organic ion exchange resins been developed. Large use of ion exchange in diversified fields has come as a natural result. Uses which have developed range from laboratory analytical procedures to large plant-scale operations.

As previously indicated, the advent of organic ion exchange resins in recent years has led to the development of a large number of processes. Demineralization of water is perhaps the most widely used type of removal reaction employing ion exchange. This process may be applied to the purification of sugar solutions, such as corn sugar or beet sugar. This purification removes objectionable materials such as color or ash and allows a larger yield of sugar during crystallization. Polyhydric alcohols such as glycerine have been purified in this way.

Other types of removal reactions, which can be carried out in one step instead of two steps, are the removal of a small amount of formic acid usually present in formaldehyde produced by catalytic oxidation of methanol, or also in the treatment of gastric ulcers and gastric hyperacidity. Weakly basic anion exchangers regenerated with an alkali are used in both these cases and remove the objectionable acid directly.

Metathesis reactions, or reactions wherein one ion in the material being treated is replaced by another more desirable one, might be illustrated

(Continued on page 203)



NONYL PHENOL

...proves best for better products

Description:

Jefferson's nonyl phenol is a mixture of monoalkyl phenols, predominantly para substituted and is a clear viscous liquid. The side chains are isomeric branched alkyl radicals.

Sales Specifications:

Specific Gravity at 20/20 °C.	0.94-0.95
Hydroxyl Number	245-255
Color, Pt-Co Scale	300 max.
Appearance	Clear and substantially free of suspended matter
Boiling Range, ASTM (760 mm.) °C.	
IBP:	287° min.
5%:	290° min.
98%:	302° max.

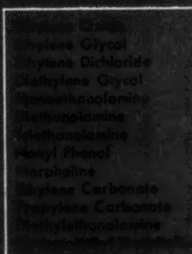
Suggested Uses:

1. An intermediate for detergents, emulsifiers, etc.
2. A stabilizer for ethyl cellulose
3. A plasticizer for cellulose esters
4. An intermediate for other plasticizers
5. A starting material for production of lubricating oil additives and rubber chemicals
6. An antioxidant

Availability:

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Briefs

From recent literature

No. 6 in a Series

Modified phenol-aldehyde resins for coating compositions to give films which are markedly resistant to weathering and are otherwise durable, are relatively inert toward, and compatible with, pigments and fillers, are smooth, have high gloss, are resistant to water and alkali, and retain their hardness under conditions of high humidity, can be obtained using nonyl phenol and an aldehyde as starting materials.

A fire extinguisher compound which is noncorrosive can be produced by dissolving in water 1 to 10 parts of sodium nitrite per 10 parts of an alkylated phenolethylene oxide condensate. The ingredients are mutually soluble in a dilute water solution and do not react to accelerate corrosion in a concentrated solution.

New thermoplastic compositions which are particularly useful in coating formulations, waxes, insecticidal compositions, etc., may be prepared by condensing alkyl phenol with formaldehyde and a higher fatty acid having at least 8 carbon atoms, converting the condensation product to a metal salt, and adding a fatty alcohol of at least 8 carbon atoms. The composition is soluble in gasoline, kerosene, and various petroleum naphthas. When used on metal, the protective coating is a tough, adherent, water-repellent film which may be removed when desired by wiping with a cloth dipped in kerosene.

A washing powder containing a synthetic, soapless, oily liquid detergent, can be produced by mixing a solution of the polyethylene oxide condensation product of an alkyl phenol with the sodium salt of carboxymethyl cellulose, sodium carbonate, sodium bicarbonate, and sodium sulfate. The detergent does not tend to separate on storage from the inorganic constituents used to make up the powder.

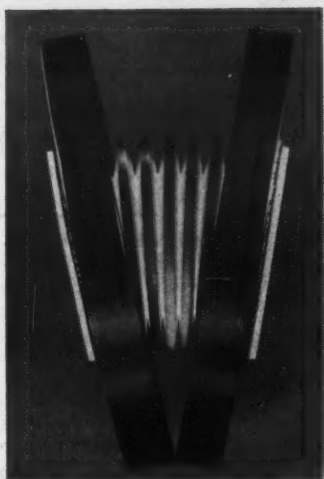
These developments are abstracted from recent publications or U.S. patents. They may suggest applications of Jefferson Nonyl Phenol in your products or processes.

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IF YOU HAVE ANY OF THESE PIPING PROBLEMS

● MISALIGNMENT ● EXPANSION
● CONTRACTION ● VIBRATION

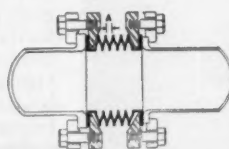
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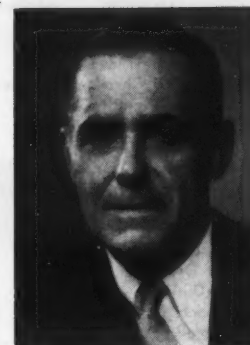


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PIONEERS OF PROGRESS

Perhaps 10,000 years ago, a desert tribesman poked around in the sticky puddle his camp fire left in the sand. He was the first to draw a glass fiber. President Boeschstein, Games Slayter, and others of the Owens-Corning Fiberglas Corporation are still drawing glass fibers, but with a difference — instead of curiosities, they are providing us with . . .



HAROLD BOESCHSTEIN

*Fiberglas products for use in everything
from car bodies to lace curtains*

— A NEW CONCEPT IN GLASS

PICTURE a man feeding a glass rod into a blowtorch flame. His object is to fuse a colored glass trademark onto a glass bottle. He watches the results of this first experiment. Suddenly he stares a little harder, puzzled . . . instead of building up a new flat surface, the flame-ejected glass forms a fluff of silky fiber.

This happened. The man was John H. Thomas, now Vice President of Owens-Corning and General Manager of the firm's Textile Products Division. Watching his young assistant's action was Games Slayter, a young chemical engineer retained in 1931 by Owens-Illinois president William E. Levis. Mr. Slayter had been retained for just such a purpose — to open up new market potentials through new products in the depression-becalmed glass industry.

Of course, not all fibrous glass is prepared by this technique of blowing. The blowtorch has given way to special equipment where molten glass from the furnace is swept out by high-speed air or steam jets. Depending on conditions of operation, product ranges from gossamer clouds of fiber to stiff straw-like filaments. Accordingly it is used (with suitable binders) as cold storage, building, equipment and appliance, industrial and transportation insulation, air filters, or furniture cushioning, sound control products, form board, pipe wrap, etc. Bonded mat is used as battery separators, retainer mats, underground pipe wrap and for other purposes.

The other process for making glass fiber is the older drawing method. Here, molten glass flowing

through small holes is spooled up faster than it flows . . . with the result that it is drawn down to uniform diameters ranging from 2 to 5 ten thousandths of an inch. This type finds its way into marquisette curtains, roofing mops, glass-reinforced plastics, and such unlikely things as fishing rods.

New Product, New Company

Though many people had tried their hand at glass fibers (German patents date from the turn of the century), the work that "clicked" was done by Owens-Illinois. After their discovery in 1931, they buckled down and were shipping air filter units a year later. Another firm that had worked on the fiber was Corning. Disgusted after fruitless work in the 20's, they returned to the problem in 1934.

It became apparent to the two companies that by interchange of experience and experimental trial and error they could accelerate commercial results. Though Owens-Illinois had operating experience, Corning had more fundamental knowledge of glass. Both firms were spending heavily for research. It was natural that they should pool their efforts . . . they did, in 1935.

Textile fiber drawing was made workable and blowing processes were improved during the next three years. But despite bright prospects, this joint venture was not paying its way. In fact, by 1938, the two parent companies could point to a \$10 million bill for research and not much else. In a sink-or-swim measure, both companies agreed to let their

When inquiring check CP 3902 on handy form, pgs. 2-3

off-spring stand on its own feet. In October of 1938 the new Owens-Corning Fiberglas Corporation was formed with Harold Boeschstein as president.

Boeschstein ("Beck" to his friends) had worked at numerous jobs — a bank, a newspaper, a railroad, a two-year stretch in the Army (he rose from private to 2nd lieutenant), and with a subsidiary of Illinois Glass. His record with the glass company won him recognition. He was appointed Vice President in 1927, and Vice President of Owens-Illinois after the 1929 merger. He resigned as General Manager of Owens-Illinois to head the new Fiberglas venture.

While the first year of independent operation was not a spectacular success, there was a net income at the end of it. Fiberglas (Owens-Corning trade-mark for its products) building materials began to catch on, air filters had become a steadily growing market, other special products were coming to harvest.

Behind all this was not only the business acumen of this new company's executives, but ability and plenty of hard work on behalf of its technical people. Bugs were worked out of the wool (blowing) process by Games Slayter, John H. Thomas, Benjamin E. Boyd, Harry V. Smith, Jan Irvine, Ed Fletcher, and Dale Kleist. These men started in research and development work . . . a number of them are now executives of Owens Corning.

Another Owens-Corning official, Executive Vice President W. P. Zimmerman, started by working on a technical problem. When he first came with the company the big headache of wool production was in finding a binder which held fibers in place without creating insurmountable production problems. Drawing on his industrial background, Zimmerman was able to work out phenol formaldehyde binders which were practicable and opened the door to widespread use of refrigerator, building insulations and many other products.

War brought problems as well as a demand for products. Fiberglas textiles had been worked out just before the war started. Purchase of a plant in Rhode Island allowed Owens-Corning to turn out glass insulation for electric motors — but it was not well received at first. People who worked with electrical components were familiar with other types of insulation; they were not anxious to redesign motors to take advantage of glass. In fact, for a while, nobody could take full advantage of glass insulation because there was no suitable bonding material which would stand high temperatures as glass would. Developments in this field, however, led to silicone varnishes, lubricants, etc., and glass insulation for motors did turn into a real market.

On the other hand, many fields where glass fiber had been starting to catch on were cut off by the war. Thermal insulation for private homes, for instance, was a big market during the war — people wanted to make the most of rationed fuel oil — but it was a market which Fiberglas did not reach. All Fiberglas output went into essential war projects.

Another wartime problem was staffing a growing company. With more orders than ever (business

(Continued on page 207)

Look for These Signs of GOOD PUMP DESIGN

CAST SHAFT SLEEVES, not commercial tubing, save the shaft from wear. Sleeves extend through the stuffing box and seal at the impeller hub.

HEAVY HORIZONTAL SPLIT CAST-IRON CASING construction with suction and discharge nozzles located in lower half for easy inspection without disturbing piping.

COUPLINGS have Magic-Grip quick change bushings for pump and drive shaft. Pin and rubber bushing type usually used. Removal for maintenance is easy.

BALL BEARINGS may be furnished for either oil or grease lubrication. Sleeve bearings also available in larger sizes.

DOUBLE SUCTION ENCLOSED IMPELLER is precision turned and carefully balanced to assure vibrationless operation and close wearing ring clearance. Water passages are hand finished to a smooth surface.

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GENEROUS STUFFING BOX LENGTH contains sufficient packing to keep stuffing box maintenance low. Provision is made for sealing water connections or for grease seal if these are required.

ALLIS-CHALMERS Double Suction PUMPS

THESE DESIGN AND CONSTRUCTION features of Allis-Chalmers double suction pumps assure long pump life and low maintenance costs. Every A-C double suction pump is carefully tested on the most modern pump testing equipment in the industry.

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Allis-Chalmers can furnish the complete pumping unit — pump, motor, control and drive — all of coordinated design and manufacture.

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CONTROL — Manual, magnetic and combination starters; push button stations and components for complete control systems.



TEXROPE V-belts in all sizes and sections, standard and Vari-Pitch sheaves, speed changers.

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*new solutions
of processing problems*

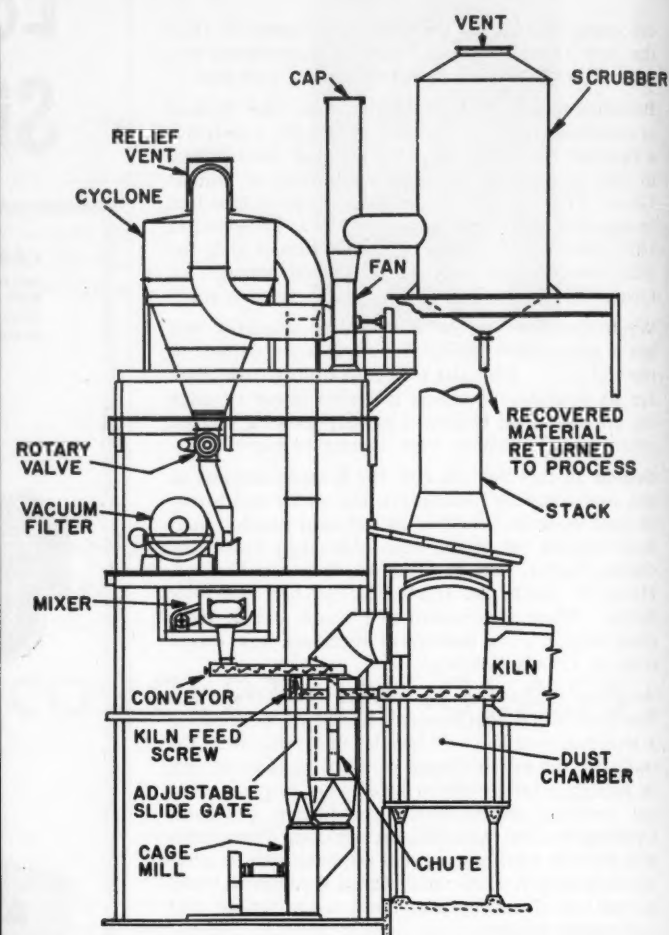
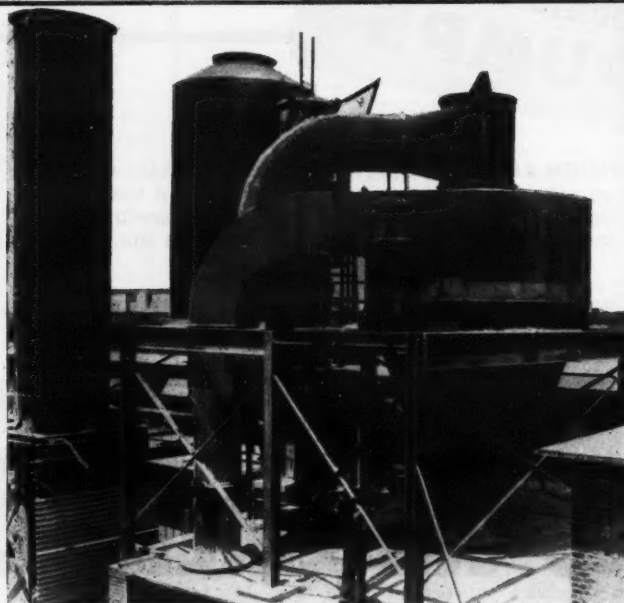
Burning Rate of

Pulp Mill's Lime Kiln Is Up 40%

Since Pre-drying of Feed Was Begun

Flash-drying system, incorporating wet scrubbing of vent gases, slashes make-up lime needs, cuts fuel bill

View of outdoor parts of flash-drying system at Chesapeake Corporation of Virginia. In foreground at right is cyclone collector, while Peabody scrubber is in center background and exhaust fan is to left of cyclone. Building underneath houses vacuum filter, mixer, screw conveyors, cage mill, kiln and other equipment for the pulp mill's recovery of lime



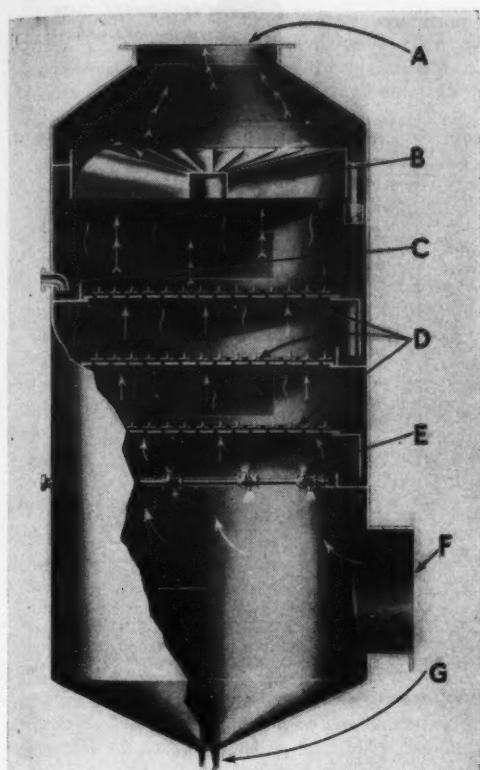
Flash-drying system as used for pre-drying calcium carbonate before kiln in pulp mill lime recovery

PROBLEM: As kraft pulp production at The Chesapeake Corporation, West Point, Va., reached a high of 570 A.D. tons per day* in early 1951, operation of the "undersized" rotary kiln used for reburning pulp mill lime mud in the lime recovery system became extremely uneconomical. The 9 x 120' kiln, installed in 1935 when pulp production was only 270 A.D. tons per day, couldn't keep up with the expanding production, as was evidenced by high lime losses and fuel costs.

Obvious solution would be an additional kiln to supplement the original one. However, space limitations would have forced this to be placed remote from existing lime recovery equipment. This, in turn, would have meant additional labor and more equipment for returning the lime to the present causticizing system . . . not to mention the rather large installed cost of a new kiln.

Solution: Two steps — a year apart — were made in

*A. D. tons per day means air-dry tons per day. It signifies pulp having 10% moisture — normal composition when air-dried.



Gas and liquid flow diagram of multistage Peabody scrubber. (A) is clean gas outlet (B) is water eliminator, (C) cold water inlet, (D) impingement baffle plate stages, (E) humidifying spray, (F) hot gas inlet, and (G) warm water discharge

overcoming the difficulties without the high costs which would be necessary if an additional kiln were installed. First, excess heat going up the stack from the natural draft hood of the existing kiln was put to work in a new flash-drying system,

(Continued on page 16)

How Flash-drying and Wet-scrubbing Improved Lime Recovery Operations

	(1) Before drying of kiln feed	(2) With drying*	(3) Dry & scrub***
Make-up lime, lb/A.D. ton	106	67	37
Reburned lime, tons/day	57	80**	74
Bunker C fuel oil, gal/ton lime	108	67	69

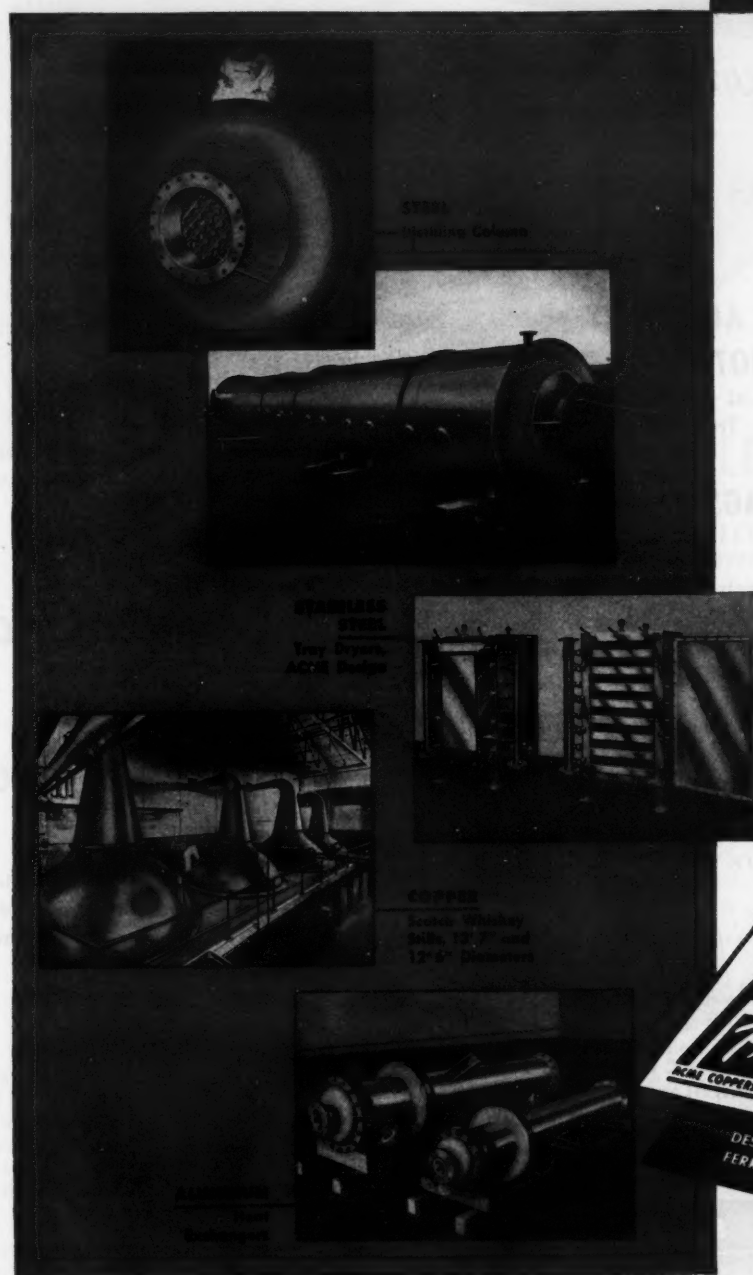
*Figures in this column were obtained while operating recovery system with a heavier loading than in column (1), due to a pulp production gain of 19%.

**This does not allow for a total of 7% downtime. If this were accounted for, reburning rate would be 86 tons per day.

***Figures in column (3) represent pulp production rate 6% higher than column (1).

VERSATILITY

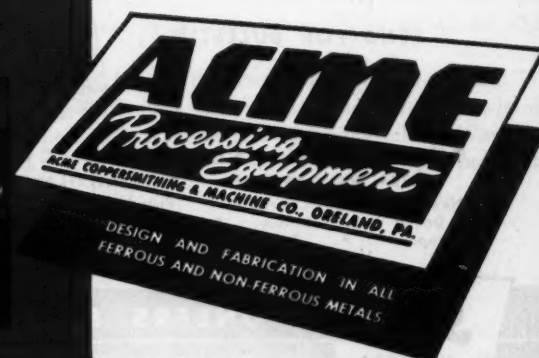
- * DESIGN
- * ENGINEERING
- * FABRICATION



LLeading Process Industries have come to depend on Acme for more efficient equipment for virtually any purpose. Acme versatility has paid dividends to many processors in time and effort saved, in greater economy of operation and more productive yields of high quality products.

The illustrations shown here are but a few from thousands of diverse units in current, successful use all over the world.

When planning a replacement or expansion program, consult Acme first!



When inquiring check CP 3904 on handy form, pgs. 2-3

NOW! THE DYNACLONE®

PATENTED

The **ULTIMATE** in Dust Filters



① **CONSTANT SUCTION**
AT DUST SOURCES

② **SELF CLEANING**
FOR CONTINUOUS
OPERATION

③ **NO AUXILIARY
MOTORS OR BLOWERS**
(THE MAIN OPERATING FAN DOES
THE CLEANING)

④ **NO ABRASION OF BAGS BY THE CLEANER**

The traveler (T) is open to atmosphere by means of a 4-inch flexible hose. As the traveler contacts the open end of each bag, the negative pressure which exists in the dust chamber draws a blast of air (from the atmosphere) through the bag to thoroughly clean it.

Each bag is cleaned, on an average, once every five minutes, thereby assuring uniform suction at dust sources.

The Dynaclone has now been in operation in many different industries for the past three years. More than half of present orders are from the same customers.

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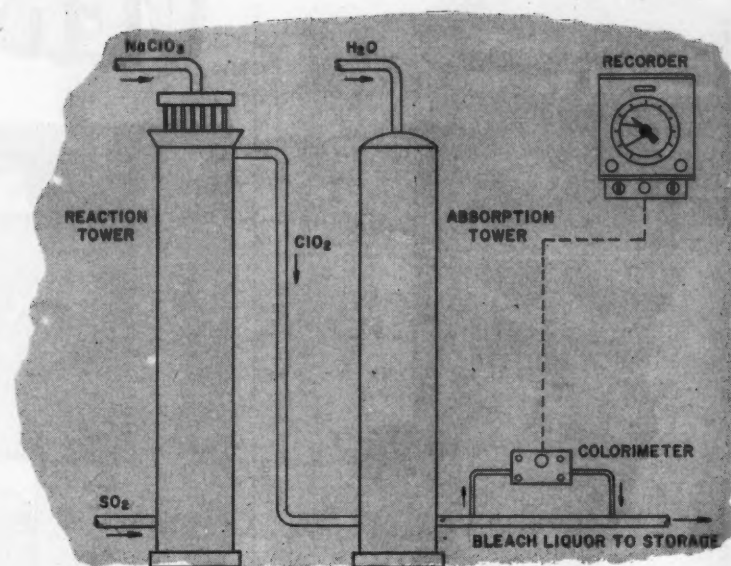
SLY

PIONEERS & LEADERS

in INDUSTRIAL DUST CONTROL

When inquiring check CP 3905 on handy form, pgs. 2-3

new solutions
processing problems



Manual control of this chlorine dioxide system has been achieved

Continuous Color Measurement

Supplants 20-minute Lab Tests,
Holds Reaction in Line

Reaction in chlorine dioxide generator
sometimes moved right out of tower — but
now it's held within 5%

CHLORINE dioxide bleaching of paper pulp solved an immediate problem — eliminating a yellowish cast that sometimes showed up in pulp bleached by previous methods. But, at least in some mills, production of chlorine dioxide itself became a new problem.

The oxidizing gas results when sodium chlorate and sulfur dioxide are fed, counter-current, to a reaction tower. Chlorine dioxide is removed from the tower and

passed through an absorption tower where bleach solution is made. Both SO_2 and chlorate are metered into the reaction tower, chlorate solution entering tower through distributing pipes. Manual proportioning is used, and when settings are correct, reaction takes place near the center of tower.

If proportion gets out of line, however, tower goes out of balance . . . and unless a quick correction is made, reaction

goes out of the tower's top, causing a shut-down of entire plant.

When experience showed that a condition of tower unbalance was reflected in a change of concentration (and color) in the bleach liquor, it looked like there was an apparent solution. A full-time tester was employed to make laboratory tests every 15 to 20 minutes. But since change of conditions could be far more rapid than this — it took about two minutes for reaction changes to show up as color changes — there was no safeguard between tests.

Besides lost man-hours of testing, bleach production was running up other bills. Changes of bleach concentration too small to denote tower unbalance were large enough to unbalance the bleaching process.

Research department of one of the mills studied this problem and learned that a Flow Colorimeter in conjunction with an electronic recorder could give accurate information continuously, and rapidly enough to make control possible.

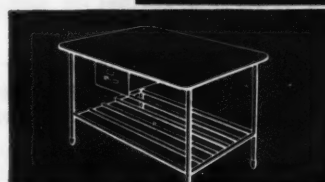
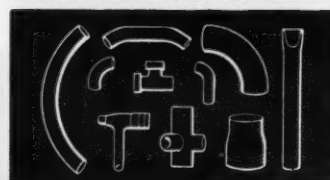
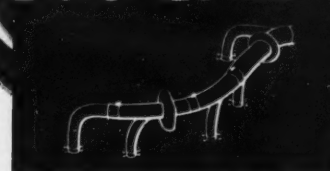
Colorimeter compares intensity of light passing through an air path to a phototube, to that of light passing through a continuously flowing sample of bleach liquor and to a second phototube. Of course, spectral filters and collimating lenses are used, also. Difference of light intensity at the two phototubes changes duty cycle of a multi-vibrator and it is indicated by a meter in the colorimeter — decrease in light transmission through the flowing fluid increases meter reading. Spectral filters can usually be chosen, as in this case, so that meter reading reflects change in concentration of the desired variable and is not affected by interfering substances. Thus meter readings are directly convertible to ClO_2 concentration.

Terminals at the colorimeter permitted a remote recorder to be connected, and this was located on the plant's main panelboard. Tower unbalance can be quickly spotted now and brought back in proper balance.

In a typical case, mill is able to hold a concentration of 2 grams ClO_2 per liter with an accuracy of plus or minus 5 per cent. At present, operator reads bleach concentration and positions index of a flow regulator.

(Beckman Flow Colorimeter and "Elektronik" recorder were furnished as a system by Brown Instrument Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne & Windrim Aves., Philadelphia 44, Pa. . . or for more information check CP 3906 on handy form, pages 2 and 3.)

Nine "New Solutions" articles
in this issue tell how plant
problems were solved



TRENTWELD

STAINLESS STEEL TUBING

TRENT TUBE COMPANY, GENERAL SALES OFFICES, EAST TROY, WISCONSIN (Subsidiary of CRUCIBLE STEEL COMPANY OF AMERICA)

*You can rely on TRENTWELD . . . a product of
tube mill specialists*

WHATEVER your tubing application, TRENTWELD will give you long, trouble-free service.

That's because TRENTWELD is rolled and welded by tube engineers in a mill devoted exclusively to the production of quality stainless and high alloy tubing. An exclusive fusion-welding process, in which no filler rod is used, insures a sound weld indistinguishable from the parent metal, and of exactly the same analysis.

TRENTWELD possesses great mechanical strength and corrosion resistance. Flare, bend, and crush tests all demonstrate that tube failure *does not* occur at the weld.

And when it comes to tubing sizes and finishes, Trent offers the widest range in the industry . . . from $\frac{1}{8}$ " to 40" O.D. and up.

Millions of feet of TRENTWELD have been fabricated into thousands of products, with perfect results, by users who demand the best in stainless and high alloy tubing. When you have a tubing application, remember — *you can't buy better tubing than TRENTWELD.*

When inquiring check CP 3907 on handy form, pgs. 2-3

**Eight months heavy duty service
withstood by suction hose
handling sulfuric acid**

Problem: At a large chemical plant in the East 20% sulfuric acid is used in the preparation of titanium dioxide, which is used in making paint pigments, paper, printing inks and plastics. This acid is drawn through 40 filter leaves in a 3½



View of plant area where suction hose is used to handle 20% sulfuric acid

hr cycle, during which time four tons of pigment is produced. A method of conveying the sulfuric acid between various tanks was required.

Solution: Approximately eight months ago acid suction hose was acquired and placed in operation, as shown in accompanying photograph.

Results: Although the hose has been subjected to terrific punishment — moved five times every 3½ hours up, down and across the floor, splashed with acid on the outside, continually wet from water spray, stepped on, in service 24 hr a day — it is still in good condition.

(Suction hose is product of Quaker Rubber Corp., Div. of H. K. Porter Co., Inc., Dept. CP, 4915 Conly St., Philadelphia 24, Pa. . . . or for more information check CP 3908 on handy form, pages 2 and 3.)

**Shear pin bill cut to zero
now that fluid coupling
protects conveyor . . .**

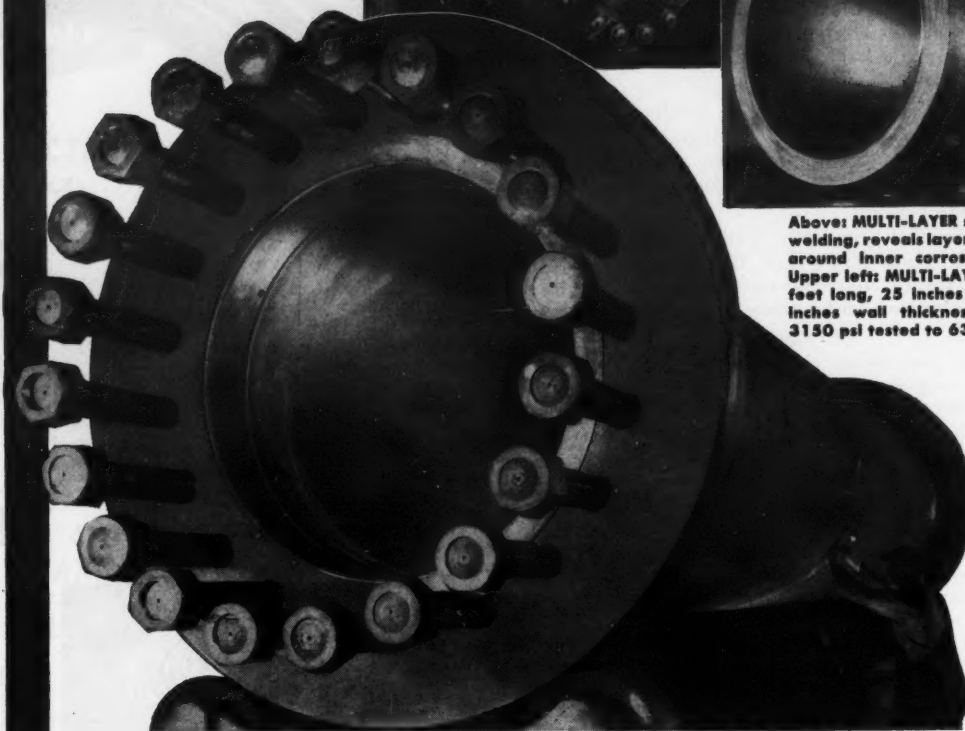
unit slips when tramp iron jams screw conveyor, thus absorbing the shock

Problem: Much down-time was caused by tramp iron jamming screw conveyor carrying coal from pile to stoker at a large textile finishing plant. Broken shear pins had to be replaced after each jam.

Solution: A hydraulic coupling, the 8.4 Hydro-Sheave Drive, was placed into the drive arrangement. This unit is connected between the 3-hp, 1750-rpm motor and the worm gear reducer which drives the conveyor.

Results: Now, when tramp iron jams the conveyor, the hydraulic coupling slips and shear pins are not broken. However, under normal circumstances, the conveyor operates very smoothly.

VESSELS



A.O. Smith for

Above: MULTI-LAYER shell course scarfed for welding, reveals layers wrapped and welded around inner corrosion-resistant cylinder. Upper left: MULTI-LAYER urea autoclave, 81 feet long, 25 inches inside diameter, 3.33 inches wall thickness. Working pressure: 3150 psi tested to 6300 psi.

MULTI-LAYER synthetic converter, showing corrosion-resistant inner cylinder. 26 feet long, 48 inches inside diameter, 5.9 inches wall thickness, weight: 151,900 pounds. Working pressure: 3150 psi tested to 6300 psi. Working temperature: 700°F.

MULTI-LAYER MEETS

The designer's answer to higher pressures, temperatures, and more critical corrosion problems . . . with safety

As processing problems become more acute, A. O. Smith MULTI-LAYER construction of vessels and heat exchanger shells becomes more and more important to equipment designers and buyers.

Future requirements of processors are being solved with this time-tested design. MULTI-LAYER inherently satisfies all of the conditions of modern operation: extreme

pressures, elevated temperatures, critical corrosion conditions.

Because MULTI-LAYER construction consists of wrapping and welding successive concentric layers of relatively thin steel plate around a central, pressure-tight cylinder, no size or weight limitations are imposed, making it possible to design the vessel to fit the requirements of the process. Since the inner cylinder is pressure-tight, load-bearing layers are provided with vent holes to prevent damage from over pressure and to serve as automatic safety and warning devices in the remote event of

Outstanding Advantages

EXCHANGERS



Inter cooler (heat exchanger) with U-tube construction, being tested before shipment. Operating pressure: 2500 psi.

CHALLENGE of FUTURE

runaway overload. In applications, involving hydrogenation, venting prevents embrittling attack on the load-bearing layers. For corrosive service, the inner cylinder is fabricated of lined or clad plate, alloy steel or non-ferrous material to meet the processing condition.

Bigger batches to effect economies and meet competition in an expanding market can be planned. Advanced proc-

essing methods can be implemented. Our own designers, engineers, and research staff will welcome opportunities to assist in adapting MULTI-LAYER vessels and heat exchangers to your needs.

Send for MULTI-LAYER Bulletins: V-52, MULTI-LAYER Manufacturing and Assembling, and V-53, MULTI-LAYER Engineering for Safety.

A.O. Smith
CORPORATION



Vessels and Heat Exchangers

MILWAUKEE • HOUSTON

Licensee in Canada: John Inglis Co., Ltd., Toronto

When inquiring check CP 3909 on handy form, pgs. 2-3

OCTOBER, 1953

NEW SOLUTIONS of processing problems



Hydraulic coupling prevents snapped shear pins when tramp iron jams coal screw conveyor

(Hydro-Sheave Drives are made by Twin Disc Clutch Company, Hydraulic Division, Dept. CP, Rockford, Illinois . . . or for more information simply check CP 3909A on convenient Reader Service slip between pages two and three.)

Leakage of petroleum products licked by use of soft rubber gaskets . . .

bolted steel storage tanks used by Army Corps of Engineers are effectively sealed

Bolted steel petroleum products storage tanks for the Army Corps of Engineers are being effectively sealed from leakage with extra-soft rubber gaskets, it is reported. Filet radii bending gaskets are used to seal horizontal seams of steel tanks at points of stave overlap. Chime gaskets (offset sealing wedge gaskets) seal corner joints and those areas where three or more plates or segments overlap. The tanks, ranging from 100 to 10,000 bbl (420,000 gal) capacities, are used in rear and forward combat areas as well as at advance air fields.

Rubber gaskets must not be affected by a variety of liquids including high octane gasoline, aromatic or aliphatic fuels, lubricating oils, nor should they contaminate drinking water. Seals must be usable in climates from the Arctic to the tropics. Hycar rubber, a product of B.F. Goodrich Chemical Co., is used in gaskets. It has good resistance to the deteriorating effects of petroleum products and chemicals, extreme temperatures and pressures.

Gaskets are only half the hardness of those previously used since military requirement was for an effective seal of only 35 Shore A Durometer hardness. Filet radii bending gaskets are molded rather than extruded. Chime gaskets are also molded from soft Hycar rubber compound.

(Gasketing compound was developed in accordance with military specification MIL-T-10086A CE by Essex Rubber Div., Thermoid Corp., Dept. CP, Trenton, N.J.)



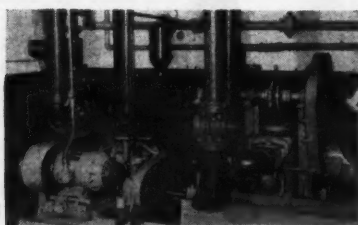
Straight through, clean as a whistle! That's the kind of *flow perfection* you get with an Q.C.F. Round Port Valve. Because they're the exact same size and shape as the pipe itself, there are no obstructions. You *always* get full capacity flow of heavy viscous ladings... without loss in head pressure. There are no

abrasive effects from solids in suspension.

The full pipe area and non-wedging effects of Round Port Valves are also found in Q.C.F. Rectangular Port Valves. Both are designed to give you long, trouble-free service with minimum maintenance. Don't settle for less than the very best. It pays!



The Petroleum Industry finds full-pipe area of Q.C.F. Valves of great advantage on both natural gas and crude oil.



In Sewage Treatment Plants the Q.C.F. exclusive Cylindrical Plug shears obstructions, provides uninterrupted flow.



In Processing Q.C.F. Round Port Valves are 100% obstruction free, ideal for handling materials in suspension.

Q.C.F.



PLUG VALVES

Write for Catalog 4-CP. American Car and Foundry Company, Valve Division, 1501 E. Ferry Ave., Detroit 11, Michigan.

Representatives in 50 Principal Cities

When inquiring check CP 3910 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

Penicillin dried under vacuum with fully automatic control in shelf dryers

Final drying of penicillin and other crystalline antibiotics at Abbott Laboratories, North Chicago, Ill., is done in these eight vacuum shelf dryers. They are equipped for fully automatic control, assuring



rigid sterile conditions. Only the dryer doors and a small part of the above casings project into the drying room.

(Dryers supplied by F. J. Stokes Machine Company, Department CP, 5500 Tabor Road, Philadelphia 20, Pennsylvania.)

Paper board mill cuts sizing costs 35% annually . . .

with combination size; machine operation improved, materials handled reduced

Problem: A small specialty cylinder board manufacturer found that they were using comparatively larger amounts of rosin size (as high as 6% of the finished paper) than was reasonable and efficient. Amounts of alum used were also large. Under this procedure they found that they were able to obtain a maximum sizing test (lactic acid resistance) on their coffee cup board and other board of merely 600-1000 seconds.

It became apparent that the excessive amounts of rosin size and alum were not adding any particular advantage to their paper board. In addition, any paper improperly sized was a complete loss and had to be re-made.

Solution: Upon recommendation, the mill adopted the use of 3% of a combination of rosin size and Mersize CD-2 synthetic resin size. Immediately, they were able to obtain a sizing test on the order of 2000 seconds, at a savings of better than 25% on the over-all cost of the size.

For more information on product advertised at right, specify CP 3911 . . . see information request blank between pages 2 and 3.

LADISH *Controlled Quality* ASSURES METALLURGICAL SOUNDNESS



TO MARK PROGRESS

SPECTROGRAPHIC ANALYSIS
One of many comprehensive
Ladish laboratory test pro-
cedures for assuring reliable
performance.

**Ladish measures the
spectrum to verify
chemical composition**

Metallurgical integrity—is safeguarded at Ladish by unsurpassed laboratory controls. Typical is this advanced electronic direct-reading spectrograph. On this unit as many as 300 determinations have been made in one hour to verify compliance of each mill heat with exacting Ladish specifications and, equally important, to assure the absence of detrimental "tramp" elements. Here is but one indication of the thorough, scientific procedures that assure reliability in every Ladish Controlled Quality fitting.

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**HILLS-
McCANNA**

**CORROSION RESISTANT VALVING
DATA SHEET**

**New Data on TEFLON* Diaphragms
for Hills-McCanna Saunders Patent Valves**

**Solid unplasticized TEFLON
sets new performance standards
in previously tough services**

HILLS-McCANNA'S introduction of the first Teflon diaphragm early this year made the advantages of the Saunders Patent Valve available for the first time in the valving of many extremely hard-to-handle fluids. The Hills-McCanna Teflon diaphragm is solid Teflon. No plasticizer is used so there is no impairment of inert Teflon's qualities or uniformity. The Teflon is not combined with any other material, not even the customary metal stud previously used to attach diaphragms. As a diaphragm, Teflon will handle temperatures to 400°F., pressures to 100 psi. This, coupled with Teflon's well known chemical resistance, makes possible satisfactory valving of virtually any concentration of mineral or organic acids; alkalis; alcohols such as aliphatic and aromatic, phenol, cresol; aliphatic, aromatic and chlorinated industrial solvents and many others.

**Performance proved in a
wide variety of installations**

Pharmaceutical — Nitration, amination, chlorination and sulfonation reactions handled up to 100 psi, 400°F.

Oil, Soap and Fat — Oleum, sulfuric acid, sulfonyl chloride and alkyl and aryl sulfonates handled successfully.

Antibiotic — Successfully used in solvent extraction service combining aseptic qualities with acid resistance of glass lining and packless construction.

Petrochemical — Provides complete resistance to chlorine, sulfonation reagents and all types of chlorinated hydrocarbons.

Paint and Varnish — Successfully handling solvents.

Fertilizer — Offers complete resistance to low pressure ammonia and urea-ammonia solutions with no stuffing box required.

Textile — Provides complete resistance to scouring, emulsifying, dispersing, sizing and kier reagents without stuffing box.

Leather Processing — Successfully handling surface active agents, finishing agents and compositions.

Write for additional reports of service in your industry.



Cutaway view of a Teflon diaphragm equipped Hills-McCanna Valve and a Teflon diaphragm. These valves are available with a wide choice of manual, remote and automatic operators. Valve bodies of cast iron or any machinable alloy or with lead, glass, rubber, plastic, etc. linings. (For hazardous services OS & Y models with Teflon stuffing boxes are available).

**TEFLON diaphragms
simplify chemicals manufacturing**

Mineral acids — sulfuric, nitric, hydrochloric, chromic — successfully handled in any concentration of 100 psi, 400°F.

Organic acids — formic, acetic, oxalic, thioglycolic, benzoic — handled at pressures to 100 psi, temperatures to 400°F.

Alkalies — sodium hydroxide, potassium hydroxide, ammonium hydroxide — successfully handled to 100 psi, 400°F.

Aliphatic and aromatic alcohols — phenol, cresol — handled at pressures to 100 psi, temperatures to 400°F.

Aliphatic, aromatic, chlorinated industrial solvents — carbon disulphide, carbon tetrachloride, etc. — handled at pressures to 100 psi, temperatures to 400°F.

FOR FURTHER INFORMATION

Write, wire or phone:

HILLS-McCANNA CO.
2370 W. Nelson Street
Chicago 18, Illinois

*Registered DuPont Trademark for Tetrafluoroethylene resin. As used in the Hills-McCanna diaphragm it is solid non-lubricated (non plasticized) Teflon.

At about the same time as these results were attained, a new chemically complete paper size — Mersize RM — was announced. This size is a blend of rosin and synthetic resin. The mill was so pleased with their first experiences with Mersize sizes that they adopted use of 3% of this product.

Results: Board mill now is obtaining tests in excess of 3000 seconds through the use of 3% of Mersize RM. Mill spokesmen report that machine operation has been substantially improved, that they are handling less material, and that they are realizing a saving of at least 35% in the annual size bill.

(Mersize sizes are a development of the Monsanto Chemical Company, Dept. CP, Everett Station, Boston 49, Massachusetts . . . or for more information check CP 3913 on handy form, pgs. 2-3.)

Air Force finds better way to stabilize zirconium dioxide, high-temp ceramic . . .

process opens door to new and less expensive methods of fabricating with material

A new technique for stabilizing zirconium dioxide has been developed in the Flight Research Laboratory at the Air Research and Development Command's Wright Air Development Center in Dayton, Ohio. The stabilization can now be done at lower temperatures, thanks largely to the use of special additives. This in turn will enable use of new fabrication methods which will reduce manufacturing costs.

Zirconium dioxide can withstand temperatures over 4000°F and promises to play a big role in future aircraft developments such as rockets, turbo-jets, and also in high-temp metallurgical research.

(Announced by Air Research and Development Command, P.O. Box 1395, Baltimore 3, Md.)

Velocity of water can be factor in corrosion of metals

Velocity by itself has little effect on corrosion of metals by water, according to reprint of technical report. However, it does have a decisive effect on many factors that control corrosion rates. Normally, corrosion increases with velocity, but motion may sometimes eliminate as well as cause local attack.

Informative reprint presents a review of 56 technical articles on this subject and pertinent unpublished data with emphasis on iron, zinc, copper and their alloys. Numerous photos and tables supplement the detailed discussion.

Bul EB-93/71 is issued by Dept. EZ, The International Nickel Co., Dept. CP, 67 Wall St., New York 5, N. Y. When inquiring specify CP 3914 on handy form, pages 2 and 3.

GUARANTEED

is a strong word

but **PROCTOR & SCHWARTZ**

can afford to use it...

for every installation of

PROCTOR DRYING EQUIPMENT is backed by a thorough analysis of the problem...

Proctor engineers' comprehensive knowledge of sound dryer design and their reputation for installing systems that perform to guaranteed specifications.

Name a product that is being dried commercially and there is a 99% chance it is being done in a Proctor system. The background on which Proctor engineers draw when working on a drying problem covers a longer period of time (70 years) . . . and a wider range of products than can be found anywhere else in the world.

Only an organization with the breadth and depth of dryer design experience

possessed by Proctor engineers can make such a strong claim and make it stick. And there is no organization with this experience other than Proctor & Schwartz.

When you have a drying problem—the easiest and safest approach is to call Proctor engineers early. The sooner you have them working with you—the sooner you'll have your solution and your guarantee that it is the right solution.

PROCTOR & SCHWARTZ • INC •

PHILADELPHIA 20, PA.

The World's First Name In Industrial

Drying Equipment and Processing Machinery

TRAY DRYERS • TRUCK DRYERS • CONTINUOUS CONVEYOR SYSTEMS
PRE-FORMING FEEDS • INFRA-RED FREEZE DRYING SYSTEMS • SPRAY DRYING •

When inquiring check CP 3915 on handy form, pgs. 2-3

this floating
anchor nut

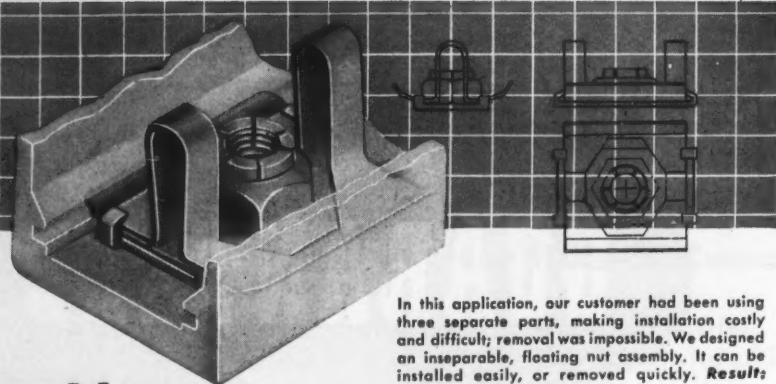
solved
a costly problem



Nutt-Shel

Manufacturers of
**SELF-LOCKING ANCHOR NUTS
BOLT AND NUT RETAINERS**

When inquiring check CP 3916 on handy form, pgs. 2-3



In this application, our customer had been using three separate parts, making installation costly and difficult; removal was impossible. We designed an inseparable, floating nut assembly. It can be installed easily, or removed quickly. **Result: sharply reduced costs.**

SHARE YOUR FASTENING PROBLEMS WITH OUR ENGINEERING STAFF

Our 10 years experience, devoted exclusively to the design and development of specialized fasteners, enables us to help you. Consultation, especially in the design stage, will result in a cheaper, more efficient fastener for your product. Write today to **NUTT-SHEL Co. Inc., Dept. CP, 811 Airway, Glendale 1, California.**

**Here's the answer to a
TOUGH PUMPING PROBLEM**

solved by AMERICAN-MARSH!

One processing firm has ordered and reordered this special Type Q-2 Vertical, Wet Pit, Centrifugal Sump Pump which for them solves a tough pumping problem . . . handling acids and caustics.

Specially designed for efficient pumping of small capacities at relatively high heads, its rugged construction makes misalignment impossible.

Chances are it may not solve your particular problem . . . but American-Marsh engineers can design a pump that will . . . or show you a standard model already built for your job.

Tailoring the pump solution to the pumping problem is an American-Marsh tradition. Call us next time you have a pumping problem.

Pumps and Pumps Only Since 1873



BATTLE CREEK

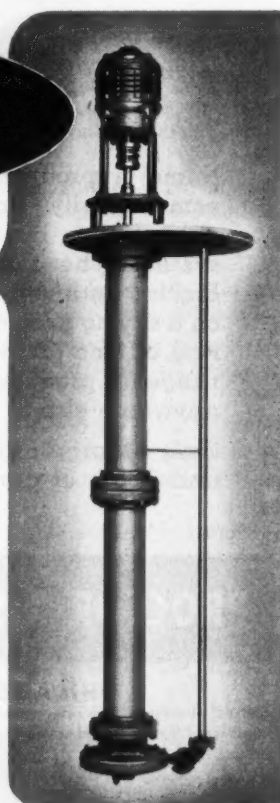
MICHIGAN

In Canada:

American-Marsh Pumps (Canada) Ltd., Stratford, Ont.

**WRITE TODAY FOR
DATA ON PUMP TYPES
THAT INTEREST YOU.**

When inquiring check CP 3917 on handy form, pgs. 2-3



NEW SOLUTIONS of processing problems

(Continued from page 9)

in which it pre-dried lime mud from the vacuum filter before it was calcined. This released more kiln capacity for actual calcining. Second, in July 1952, a wet type collector, or scrubber, was placed after the dry type cyclone collector of the flash-drying system, to recover the lime which had been escaping to the atmosphere. The final system is shown in the drawing.

The vacuum filter discharges its mud (30-35% moisture) to the pug-mill type mixer in which it is blended with all of the dried carbonate coming from the flash-dryer (1% moisture), to give a mix containing 8 to 10% moisture. From the mixer, a screw conveyor moves the mixture over an adjustable slide gate through which the proper proportion of the material drops to the kiln feed screw. The remainder goes to a chute and then to the cage mill, where it is dried by hot gases from the kiln.

Rapid drying takes place because of the high degree of agitation and disintegration that takes place in the mill. This agitation is brought about by a special bladed rotor revolving within the mill housing.

Scrubber Discharges Clean Gas

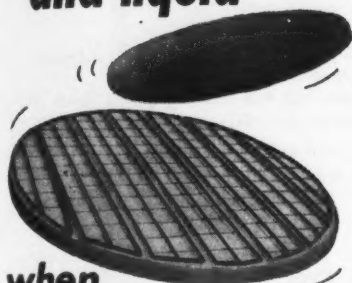
Gases, at about 150°F, and dried carbonate are carried upward and through the cyclone collector where most of the material separates out and returns to the mixer. Vent gases from the cyclone, carrying the finer carbonate particles, enter the Peabody scrubber which removes more than 97.5% of this material and discharges clean gas to the atmosphere.

Basic element of the Peabody scrubber is the



Calcium carbonate is intimately mixed with hot kiln gases in this cage mill, assuring quick drying

CLEAN SEPARATION— between vapor and liquid



when YORKMESH Demisters

are installed in:

VACUUM TOWERS
DISTILLATION EQUIPMENT
GAS ABSORBERS
SCRUBBERS
SEPARATORS
EVAPORATORS
KNOCK-OUT DRUMS, ETC.

YORKMESH Demisters (entrainment separators—mist eliminators) have proved to be the answer to higher production and improved products when installed in new or existing equipment.

YORKMESH Demisters (made of finely woven wire) remove substantially all liquid entrainment even at increased vapor velocities. The net result: More production with higher quality.

How YORKMESH Demisters work:

1. Vapor disengaging from liquid creates fine liquid droplets.
2. The liquid droplets impinge and coalesce into large drops and fall off.
3. The vapor is now dry, entirely freed from entrained liquid.

Materials: Types 430, 304, 316 Stainless Steel, Monel, Carbon Steel, etc. Prompt shipment.

Write for new Catalog 13 for complete information and engineering data.



**OTTO H. YORK
Co., Inc.**

65 Glenwood Place, E. Orange, N. J.

When inquiring check CP 3918
on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

patented impingement baffle plate which breaks up the dirt-laden gas into thousands of small jets and impinges these jets at high velocity against wetted baffles which trap the suspended matter. The carbonate dust is washed away by the scrubbing water flowing across the impingement plate, and the water with its recovered product is recycled to the filter feed. Water used in the scrubber is the normal process water from the department which, used in the scrubber, not only recovers product but also recovers heat, being warmed by the hot gases.

Clean gases leave the impingement plate stage, pass through an entrainment separator and are discharged to the atmosphere. There is now no noticeable deposition of lime dust on the surrounding area.

Flash dryer vent temperature is controlled automatically by regulating the temperature of hot waste gases from the kiln which enter the drying system. Hot gases not used are by-passed and provide a substantial margin in case oil consumption required for calcining is reduced. The calcining operation now dictates the quantity of fuel burned.

Kiln Feed Moisture Regulated

One reason the 1% moisture material is not fed directly from the cyclone collector to the kiln is that it would "blow back" out of the kiln. To prevent this from happening, the moisture content of the feed is maintained at 8 to 10% by manual adjustment of the slide gate. If feed becomes too dry, gate is opened more, thus reducing amount of carbonate going to flash dryer, which in turn reduces the amount of dried product discharged to mixer so that moisture content of the mixture is raised. Conversely, partial closing of the gate lowers moisture content of the kiln feed. In practice, the gate remains in position for days.

Results: As can be seen in accompanying table, the capacity of the lime recovery system was greatly increased and fuel consumption reduced by installation of the flash-drying system . . . even before the scrubber was put into operation. The lime burning rate was increased 40%, fresh lime make-up was reduced 37%, and fuel requirements were cut 38%.

Addition of the scrubber dropped make-up lime requirements still more — close to another 28%. It collects about 50 lb of the carbonate per A.D. ton of pulp, or about 25,000 lb per day. Quality standard of 87 to 90% available CaO has been held through all the changes.

No additional personnel is required to operate the extra equipment since it can be attended by the caustic operators. They have found no difficulty in starting or stopping the drying operation. Kiln operation has actually been slightly improved, presumably because of a more uniform feed.

After more than a year of continuous operation, the scrubber has been internally inspected twice. There has been no need for maintenance or cleaning.

(Continued on next page)

Devine

DOUBLE- RIBBON MIXERS



Featuring

"Mix-and-Counter Mix" action

Devine Double-Ribbon Mixers provide increased production along with reduced processing costs. Here's why: "mix-and-counter mix" action for more efficient mixing; removable ribbon assembly for fast cleaning; functional design for wide range of heavy duty mixing operations; all-welded construction for long, trouble-free service.

DOUBLE- CONE BLENDERS



Featuring

"Roll-and-Fold" action

Proven on the job to be dependable and efficient—today thousands of Devine Double-Cone Blenders are used throughout the food and chemical processing industries for blending powders, crystals, etc. They provide positive control of charging and discharging, rapid cleaning and minimum contamination.

Write for complete catalog information . . .

J. P. DEVINE MFG. CO., Inc.

49th Street and AVRR Pittsburgh 1, Pennsylvania

Devine

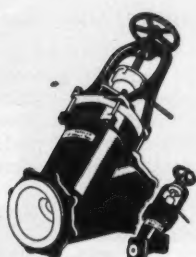
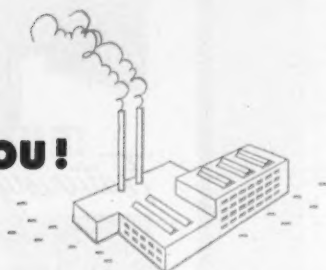
PROCESSING EQUIPMENT

When inquiring check CP 3919 on handy form, pgs. 2-3

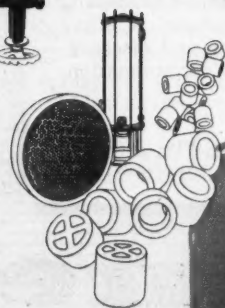
THE LABORATORY USES PORCELAIN



SO CAN YOU!



ANGLE AND Y-VALVES 1/2" TO 6"
PLUG COCKS 1", 1 1/2", 2"
FLUSH VALVES FOR 3", 4", 5"
TANK OUTLETS
PIPE AND FITTINGS 1/2" TO 8"
TOWERS 12", 18", 24"
RASCHIG RINGS 3/4" TO 3"
TOWER PLATES



Lapp
**CHEMICAL
PORCELAIN**



In putting new processes into production, there's no need to compromise with purity because industrial-scale equipment won't duplicate laboratory results . . . Nor to search for substitute materials that will produce equivalent results. Why not use the same materials in which the laboratory worked out the process?

Chemical Porcelain, world-wide standard for laboratory purity, is available from Lapp in equipment for pilot-plant and industrial production. In a wide variety of valve styles, in pipe and fittings, in towers and raschig rings, and many special shapes. It costs much less initially than special alloy or lined equipment, and, even in cases of most severe acid corrosion, usually requires no maintenance.

If you're unusually concerned about protection of product, plant, or personnel against accident or carelessness, specify Lapp Chemical Porcelain with TUFCLAD armor (multiple layers of heavy fiberglass fabric bonded with an Epoxide resin). TUFCLAD serves as protection against impact, insulation against thermal shock—and is of itself strong enough to hold operating pressures even if porcelain is cracked or broken.

For severe corrosion service, or where no metallic contamination can be tolerated, join the hundreds who have found Lapp Chemical Porcelain the only satisfactory—and most economical—processing material.

WRITE for description and specifications. Lapp Insulator Co., Inc.,
Process Equipment Division,
164 Wendell St., Le Roy, N. Y.

When inquiring check CP 3920 on handy form, pgs. 2-3

NEW SOLUTIONS of processing problems

(Continued from preceding page)

Capacity limit of the flash-drying system has not been reached. The lime-burning system produced in 1952 an average of 74 tons of burned lime per day. However, during that year there were many days when production got up to 20% above this average.

(The editors especially thank Henry Vranian, Assistant General Superintendent of The Chesapeake Corporation, for his willing cooperation in developing material for this story.)

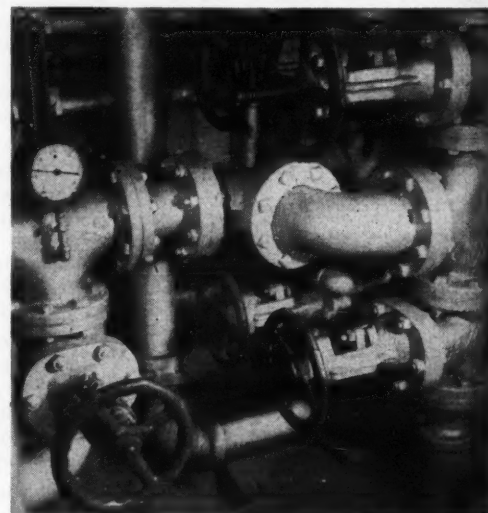
(Flash-drying system was designed by Flash Dryer Division, Combustion Engineering Inc., Dept. CP, 1319 N. Branch St., Chicago 22, Ill. . . or for more information check CP 3921A on pgs. 2 & 3.)

(Wet scrubber is a product of Peabody Engineering Corporation, Dept. CP, 580 Fifth Ave., New York, N. Y. . . or for more information check CP 3921B on handy form, pages 2 and 3.)

Twenty years service provided by six inch gate valves . . .

transfer fuel oil at temperature of 150°F and 10 to 15" of Hg vacuum

Problem: Twenty years ago Chas. Pfizer & Co., Inc. were making plans for installation of a steam generation system in their Brooklyn plant. Valves were needed for transfer of fuel oil from storage tanks to pumps with a minimum of down time.

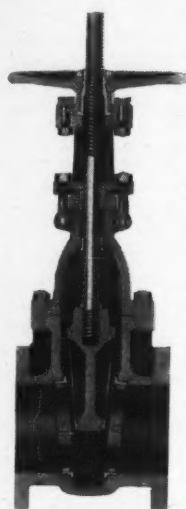


Gate valves in fuel oil service at Chas. Pfizer and Co.

Solution: The Fig 651 6" iron body gate valves shown in accompanying photograph were placed in service with the original equipment. As can be seen on the valve at the upper right, the spindle rises through the yoke sleeve. Operating threads being outside, are easily accessible for cleaning and

NEW SOLUTIONS of processing problems

lubrication and serve as an indicator of position of wedge. Another advantage of the valves that can be seen in photograph is the large handwheels with firm-grip. Any man who handles valve wheels with wet or greasy hands will appreciate item.



Sectional view of iron body gate valve

Other operating features of the valve may be seen in cutaway view. Solid wedge provides maximum resistance to pressure strains. The wedge is bronze-faced while the spindle and renewable seat rings are bronze. Body and bonnet are generously proportioned high tensile semi-steel.

Results: Valves have withstood the 20 years service at Chas. Pfizer & Co. handling fuel oil at 150°F and 10 to 15" of Hg vacuum and are still in excellent condition. The service they have given is considered to have been very satisfactory. They have been overhauled two or three times and are regularly inspected once a year. It is necessary to repack them occasionally and this

can be done without removing valve from the line. Backseating of the top of the wedge hub against the inside of the bonnet when the valve is fully open permits this economical operation. They give little trouble.

(Fig 651 Iron Body Gate Valves are product of Jenkins Bros., Dept. CP, 100 Park Ave., New York 17, N. Y. . . . or for more information check CP 3922 on handy form, pages 2 and 3.)

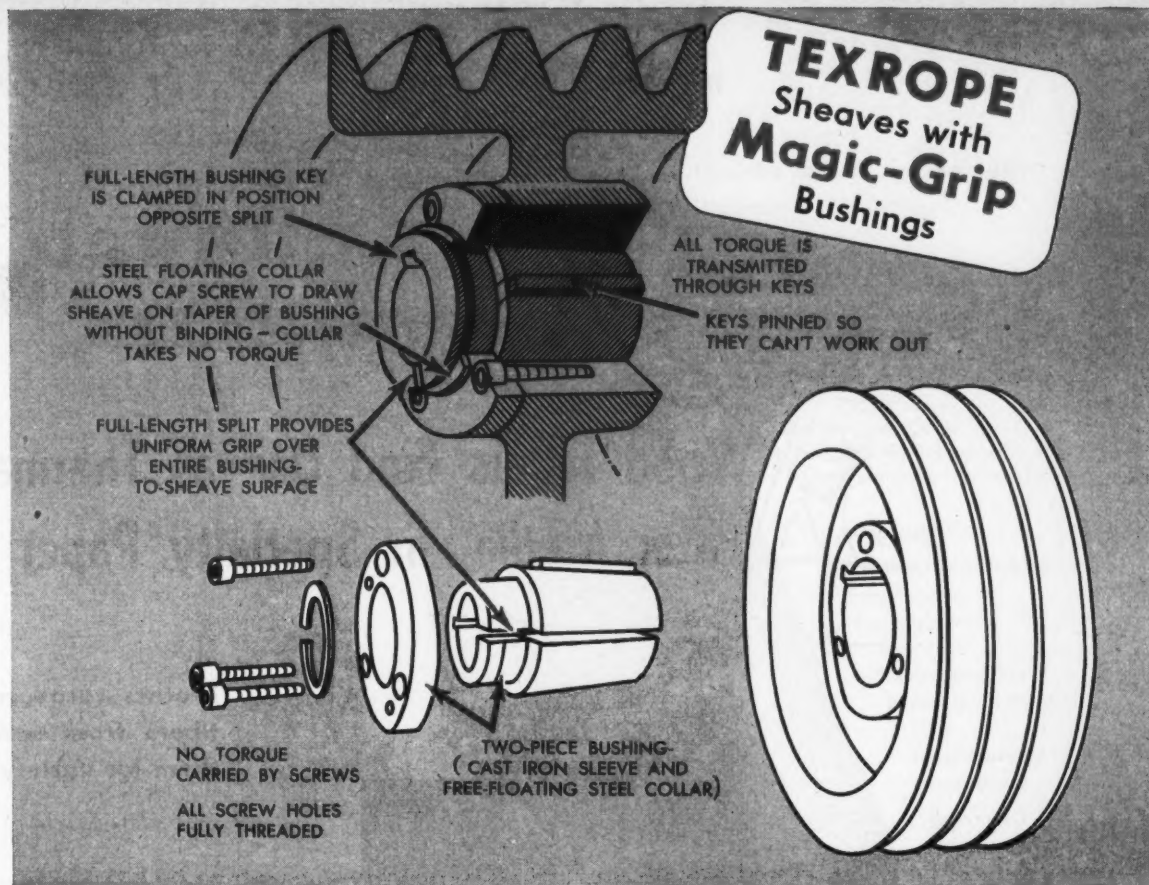
New Exhibitors and Materials Featured in Chem Show

Nearly 500 exhibitors have already engaged space for the 24th Exposition of Chemical Industries to be held in the Commercial Museum and Convention Hall, Philadelphia, Pa., November 30 through December 5. New materials and new exhibitors will be featured on the comprehensive exhibit roster which includes 240 catalog listings.

Among new materials shown is a display demonstrating the rapid advance of rare elements titanium and zirconium and their compounds in industry.

Exhibitors entering the Exposition for the first time offer innovations including such equipment as homogenizers introducing the application of super-sonic vibrations, natural frequency conveyors, magnetic separators and spectrographic equipment.

As in the past, a complete coverage of new and interesting developments will be featured in a section devoted to the Exposition in the November issue of CHEMICAL PROCESSING.



Get the Only Sheave with ALL the Most Needed Features

Here's Comparison of Magic-Grip Sheave and Other Sheaves

	Magic-Grip Sheaves	SHEAVE A	SHEAVE B	SHEAVE C
Bushing fully split for uniform clamping action.	Yes	Yes	No	Yes
Load carried by keys instead of threaded bolts.	Yes	No	No	No
Bushings cover full range of NEMA "probable" shaft diameters.	Yes	Yes	Yes	No
All screws engage full thread.	Yes	Yes	Yes	No
Mounts in one piece.	Yes	No	Yes	Yes
Squares itself with shaft.	Yes	No	No	No

Texrope and Magic-Grip are Allis-Chalmers trademarks.

ALLIS-CHALMERS

MILWAUKEE 1, WISCONSIN



When inquiring check CP 3923 on handy form, pgs. 2-3



Wood Fibers Find Use as Thermal Insulation, Filter Media, in Specialty Paper Products

Process recovers pure, whole fibers from sawmill waste and tailors them for variety of applications



Bales of Silvacel natural (right front) and dark brown (right rear)

USES: Recommended as a thermal insulating material for medium- and low-temperature applications in cold storage, buildings, electric water heaters, etc.

Has been used in a variety of paper products, including roofing felts, building papers, paperboard, specialty papers and filter media (oil filters).

Outstanding use has been made of these wood fibers in combatting and preventing lost circulation in oil well drilling.

Miscellaneous utilization has included pulp-molded articles, battery separators, ceramic "burn-out" fillers, asphalt roof coatings, explosives, automobile body undercoating, shotgun shell wads, etc.

Features: Silvacel is the unbroken, unbruised pure wood fibers just as they are found in the growing tree. Different particle sizes and shapes, combined with good flexibility (pliability) and felting characteristics, are responsible for holding oil-well drilling mud losses to a minimum in porous and fractured formations.

Fibrous structure and felting qualities are especially adaptable to formation of paper products. Rapid draining rate (freeness) and comparatively low cost are advantageous where it is not essential to have a high degree of smoothness and strength.

Low density and low thermal conductivity ("k" factor .24 @ 35°F, and .25 @ 80°F mean temp, 3.8 lb/cu ft density) are said to make

materials

SILVACEL PRODUCTS

Properties	100	101	122	123	161	180	200
Color	neutral				dark brown		
Appearance	fiber bundles & fine fibers		fine fibers		fiber bundles & fine fibers		
Particle Size, % on 8 mesh	50	15	5	2	30	35	20
% on 24 mesh	20	40	40	30	30	25	35
% on 50 mesh	10	15	20	20	15	10	15
% on 80 mesh	5	10	15	15	5	5	10
% through 80 mesh	15	20	20	33	20	25	20
Non-impacted Density, lb/cu ft	1.2	1.0	1.2	1.7	1.2	1.3	1.2
Impacted Density, lb/cu ft	3.0	2.7	3.0	3.6	3.5	3.5	2.8
Resistance to Compression, lb/sq ft	85	140	85	70	95	80	85
Sprung Back Density, lb/cu ft	2.8	2.8	2.9	3.0	2.7	2.8	2.7
Moisture Content, %	50	20	20	20	10	8	20
Dust Content, %	3	3	3	5	3	3	3
Ash, %	0.25	0.25	0.25	0.25	6.0	4.0	5.0
pH, %	4	4	4	4	9	6	9
Lignin Content, %	28	28	28	28	25	25	28
Holocellulose, %	65	65	65	65	58	58	65
Solubility:							
Water (212°F, 2% consistency), %	6	6	6	6	12	15	17
Ether, %	1	1	1	1	5	5	1
2% Caustic (4% consistency), %	25	25	25	25	25	30	25
0.1% Caustic, %	12	12	12	12	15	15	20

the wood fibers especially adapted to loose-fill insulation.

Description: Silvacel wood fibers are processed from chipped, bark-free sawmill leftovers. Wood species used are Douglas fir and hemlock. Manufacture begins with the raw materials being chipped into pieces of uniform size and put through a defibrator. In the defibrating machine, chips encounter an atmosphere of moderate-pressure steam. They are held in a preheating chamber just long enough to soften the bonds between the fiber bundles.

Chips are then rubbed apart by a pair of discs without tearing or breaking them. Wood is separated into small bundles of fibers and ultimate wood fibers. Variation in particle size and shape is controlled by the degree of defibration, while the type of chemical treatment during manufacture modifies the basic properties of the final fiber product. Desired moisture content is attained in a cyclone drier.

Materials such as resins, latex, asphalt, fire retardants and chemical reagents are added to suit the wood fibers to specific applications. The manufacturing process is said to be so flexible that Silvacel can be tailored to almost any variation.

The wood fibers are shipped in compact bales as well as 40-pound bags. A fluffing machine is employed for restoring Silvacel to its original (or required degree) of softness. The accompanying tabulation lists the physical and chemical properties of Silvacel products which should prove helpful in selecting the most advantageous one for a specific application.

(Silvacel is a development of the Weyerhaeuser Timber Company, Dept. CP, Tacoma Building, Tacoma 1, Washington . . . or for more information check CP 3924 on handy form, pages two and three.)

Plastics materials — complete info

Twelve-page booklet describes numerous applications for makers Melmac (melamine-formaldehyde) and Beetle (urea-formaldehyde) molding compounds . . . Laminac (polyester) resins . . . Urac and Melurac resin adhesives . . . and Melmac 405 laminating resin.

Included is a comprehensive properties table which lists the raw material characteristics and physical, electrical, chemical properties of the 2 molding compounds. In addition, a "gluing-to-standard" guide in the adhesives section outlines the military and commercial specifications met by these materials. Properties of the Laminac polyester group are charted for quick reference.

Plastics Booklet is issued by the Plastics and Resins Division of the American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, New York. When inquiring specify CP 3925 on convenient Reader Service slip, pages two and three.

VITAL LINKS in your production

CARBIDE'S ALCOHOLS

Available in tank car quantities:

Methanol
Ethanol
Isopropanol
n-Butyl Alcohol
Methyl Amyl Alcohol
2-Ethylbutanol
n-Hexanol
2-Ethylhexanol
Diisobutyl Carbinol
Trimethyl Cyclohexanol
(solid material—carload lots)

drum quantities:

Trimethyl Nonyl Alcohol
Tetradecanol
Heptadecanol
Undecanol
2-Mercaptoethanol
3-Methoxy Butanol

development quantities:

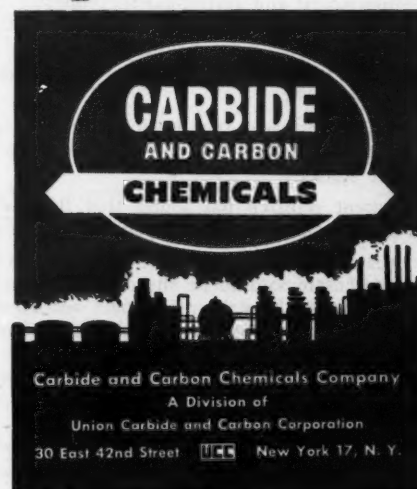
Pentanol-3
Heptanol-3
Tetrahydropyran-2-Methanol

For alcohols of highest purity, quality, and specification requirements, call CARBIDE, one of the largest producers of industrial alcohols today. Nineteen alcohols ranging from 1 to 15 carbon atoms are available.

Methanol, ethanol, isopropanol, and n-butyl alcohol are available in a variety of specification grades to suit your requirements.

Fast delivery of less than carload lots can be made from warehouse stocks in major cities. Tank truck service on some of these alcohols is also available in major industrial areas.

For further information on these alcohols or any of CARBIDE's chemicals, call or write the office nearest you. Offices are located in 21 principal cities. In Canada: Carbide and Carbon Chemicals, Limited, Toronto.



When inquiring check CP 3926 on handy form, pgs. 2-3

MATERIALS

Offering research lots of S-acetyl glutathione

S-Acetyl glutathione — the energy-rich thioester of the essential cell component glutathione — is now available for research requirements. Compound is chromatographically pure, crystalline, and more stable to oxidation than the free sulfhydryl. Bond energy of the ester linkage has been reported to be about 10,000 calories per mol.

Compound is expected to be of particular interest in biochemical studies of transacetylation, energy transfer, and sulfhydryl enzyme activation.

(Product of Schwarz Laboratories, Incorporated, Dept. CP, 230 Washington Street, Mount Vernon, N. Y. . . . or check CP 3927, pages 2 and 3.)

Complete technical data manual on beltings of all types

This "simple-to-understand" manual is comprised of 48 pages of data on transmission, conveyor, and elevator beltings. Although designed principally for engineers, each of the three major divisions of the manual contains a general information section comprehensively covering every aspect of each belting.

Technical data manual on belting is available on letterhead request to Boston Woven Hose & Rubber Co., Dept. CP, P.O. Box 1071, Boston 3, Massachusetts.

Diluent, dusting agent, and carrier are uses for inert mineral . . .

promises to have utility as ceramic material and as filling material

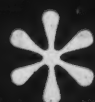
Uses: Being used as an inert diluent for active insecticidal and fungicidal ingredients. Specifically, it is being used in varying proportions with retenone and retenone fungicide dusts, and as a carrier for copper dust and also for combined DDT-copper dusts.

Also being used as a dusting agent for innertubes processed from black butyl and black natural rubber stocks.

Recent research has found that the material has potential utilization as a ceramic and filler.

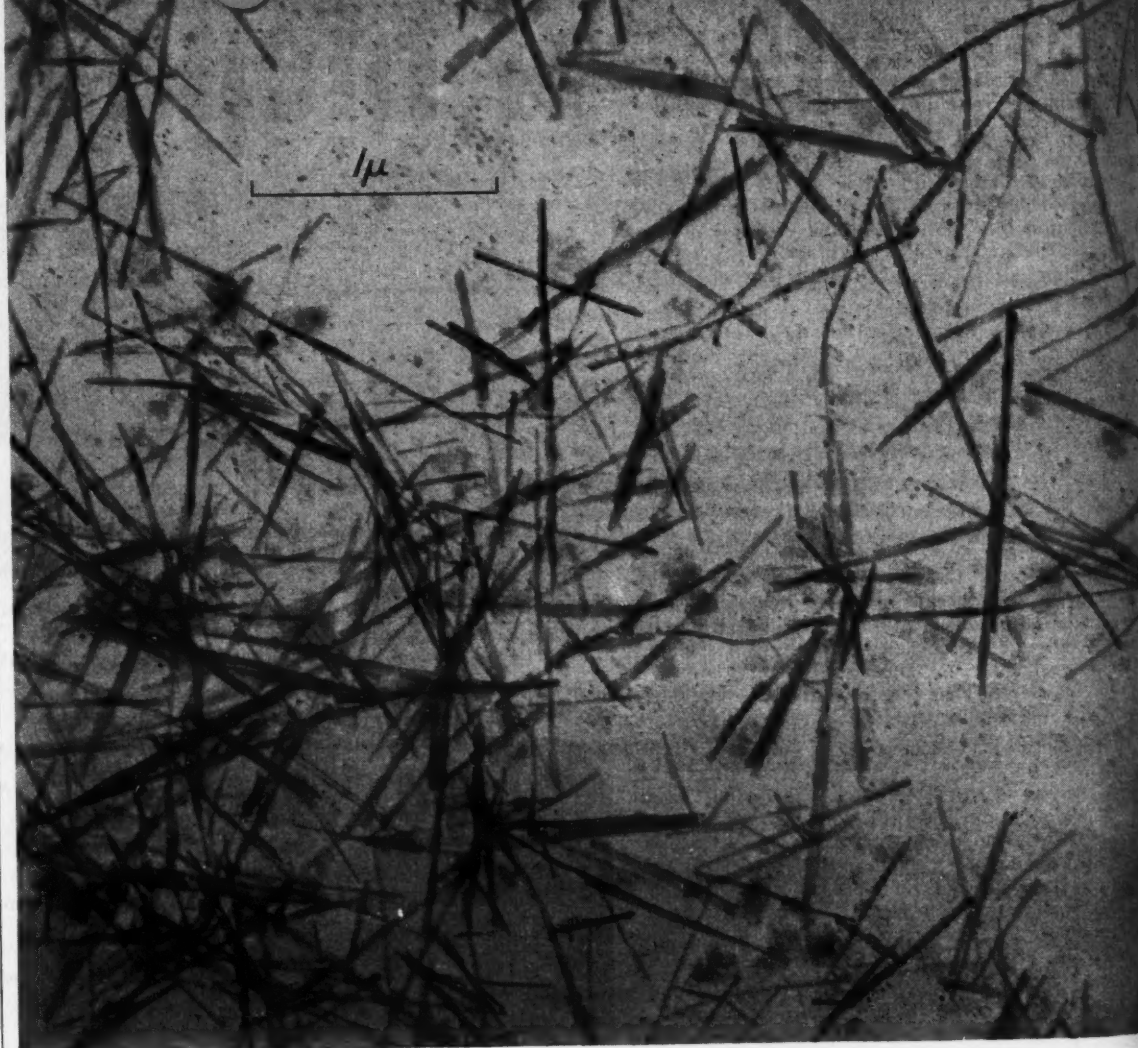
Features: Advantages from use as an insecticide carrier are said to be the material's drift control properties, neutral pH and non-hygroscopicity. These are said to make it ideal for plane dusting procedures. Static properties inherent in the material are especially advantageous in the rubber dusting field. Effective blotting can be eliminated, here, by mixing-in certain talcs.

Description: Ser-X, as the material is being called, is a hydrous aluminum silicate (Sericite schist) whose chemical analysis closely resembles pyrophyllite, with the exception that Ser-X has



*These needle-like particles approach colloid chemistry's ideal
for forming controlled gel structures. That's why . . .*

PERMAGEL may be agent in aqueous



your ideal bodying or organic systems

Permagel is a brand new Attapulugus product. It is an entirely inorganic purified colloidal form of the mineral attapulgit. Its properties are likely to be highly rewarding to industry, for they are uniquely different from those of other bodying agents.

Noteworthy is the fact that Permigel's flexibility now provides a method of producing gel structures that show high stability (even in the presence of electrolytes), and that are controllable with respect to such properties as: gelling rate, viscosity or consistency, and degree of thixotropy. In fact, Permigel will body organic media which heretofore have proved highly troublesome. And, Permigel's *low cost per pound* makes it highly attractive from an economic standpoint.

Permigel offers additional desirable properties:

- Highly sorptive • grit free • non-toxic • easy to disperse • capable of buffering • light cream in color • dry • free-flowing • trouble-free to store or handle.

Do you have a bodying or thickening problem in your product or product-to-come that Permigel might help you solve? Please feel free to write us about it. We'll supply generous, free working samples and more information at once, and be ready with carlots of Permigel by the first of the year.

Some New or Potential Uses for Permigel

Permigel functions as a thickener, gelling agent, stabilizing ingredient in colloidal systems, strengthener and suspending agent.

It's of particular interest to the following fields: Ink • Paint • Polish • Wax • Cosmetic • Pharmaceutical • Oil Base Drilling Mud • Resin • Adhesive • Textile • Paper • Insecticide • Elastomer • Metal Drawing Compound

See Permigel at work . . .

. . . at our exhibit
(Space S-57) at the
24th Exposition of
Chemical Industries—
November 30 to Decem-
ber 5—Philadelphia.



ATTAPULGUS Minerals & Chemicals Corporation



DEPARTMENT B

210 WEST WASHINGTON SQUARE, PHILADELPHIA 5, PA.

When inquiring check CP 3928 on handy form, pgs. 2-3

MATERIALS

a higher iron and potash content. It is greyish in color, foliated, and has a greasy feeling much like talc. Following is chemical analysis:

Ser-X	
SiO ₂	73.08%
Al ₂ O ₃	13.70
Fe ₂ O ₃	3.12
TiO ₂	0.54
CaO	0.30
MgO	1.14
Na ₂ O	0.22
K ₂ O	5.46
Ignition (balance)	2.34
<hr/>	
100.00%	

The pH runs around 7.0, while the bulk density in a settled form is 65 lb/cu ft. Manufacturer is running a 93-95% through 325 mesh product. Final product has less than 0.3% moisture.

(Ser-X is a product of the Summit Mining Corporation, Dept. CP, Bashore Building, Carlisle, Pa. . . . check CP 3929, pages 2 and 3.)

Add nine new organics to chemical line

Nine new organic chemicals have been added to this manufacturer's standard line. One of the more interesting is 1-phenyldodecane — shaped like a hammer, with benzene ring for head and a saturated C₁₂ for handle. Physically, the chemical is a slightly viscous liquid that melts at -5 to -3°C and boils at 179 to 180°C when pressure is reduced to 13 mm Hg. Density runs about 0.86. The nine are:

α-Chloro-N-ethylacetanilide
Dehydrocholic acid
Di-n-butyl fumarate
Di-iso-butyl fumarate
Di-iso-butyl phthalate
α, α-Dichloro-p-xylene
Isonicotinic acid
l-Menthol (synthetic)

(Products of Eastman Organic Chemicals Department, Distillation Products Industries, Dept. CP, Rochester 3, N. Y. . . . check CP 3930, pages 2 & 3.)

Properties, applications for Teflon-coated glass fabrics

Woven glass fabrics impregnated and coated with Teflon is the theme of a new technical bulletin. Such fabrics are noted for good electrical and mechanical properties, chemical and solvent resistance and anti-friction qualities. Suggested applications in the aircraft, chemical, food processing, packaging, paper, plastics, printing, rubber and textile fields are covered. Teflon Coated Glass Fabrics bulletin is issued by the Fabrics Division of E. I. du Pont de Nemours & Company, Dept. CP, Room 812, 350 Fifth Avenue, New York, New York. When inquiring specify CP 3931 on handy form, pages 2 and 3.

• Davison Bulletin •

CONFIDENTIAL CONFIDE

Confidential handling of catalyst problems is one of the reasons why Davison is the major catalyst producer in the country. Intricate coding plus restricted internal distribution keeps your catalyst secrets safe in Davison hands.

Davison recognizes that catalysts are the heart of chemical reactions, therefore, they are a most carefully guarded secret. And Davison is equipped to meet the requirements of almost any given catalyst problem.

Bring your catalyst problem to Davison where you are assured of confidential handling. Call your Davison Field Service Engineer or write.



HYDROGEL to induce microporosity

Manufacturers are using economic hydrogel to induce microporosity in rubber, resins and plastics. Material is a highly hydrated amorphous silica. The hydrogel, which is incorporated in rubber products, shrinks during drying operations thereby inducing porosity.

Davison hydrogel (SiO_2) x H_2O is colorless, translucent and available in semi-solid lumps or finely divided. The range of pH is 5.7 - 6.8.

For further information, samples, prices - call your Davison Field Service Engineer or write.

SOME STANDARD CATALYSTS AVAILABLE

$\text{V}_2\text{O}_5 \cdot \text{K}_2\text{SO}_4$ on Silica

$\text{SiO}_2 \cdot \text{Al}_2\text{O}_3$ Combination

$\text{Pt} \cdot \text{SiO}_2$ Combination

Hg Cl_2 on Charcoal

Progress Through Chemistry
THE DAVISON CHEMICAL CORPORATION
Baltimore 2, Maryland

Producers of:
Catalysts, Inorganic Acids, Superphosphates, Phosphate Rock, Silica Gels and Silicofluorides. Sole Producers of DAYCO Granulated Fertilizers.

Please send me information on

- ☐ Product Data Sheet - Davison Hydrogel
☐ Specialty Catalysts

Name Title

Company

Street

City Zone State

MATERIALS

Recommend molding compound for applications where humidity is high . . .

mineral-filled phenolic is formulated for fast cure and long flow characteristics

A mineral-filled phenolic molding compound — Durez 16274 Natural — for molding parts requiring high dielectric properties is currently available. The material is said to have a low dissipation factor and low water absorption qualities. It is recommended for the manufacture of parts to be used where conditions require long exposure to high humidity. Electrical properties are said to be retained even after lengthy immersion in water.

Compound was formulated to offer good molding characteristics — fast cure and long flow. It is available in two plasticities, one recommended for compression molding and the other for plunger or transfer molding. It meets requirements of MIL-P-14 specification, Type MFE.

(Product of Durez Plastics & Chemicals, Incorporated, Dept. CP, North Tonawanda, New York . . . or check CP 3933, pages 2 and 3.)

Soil stabilization projected use of H_2O repellent . . .

may someday be used to prevent waste of water in irrigation ditches

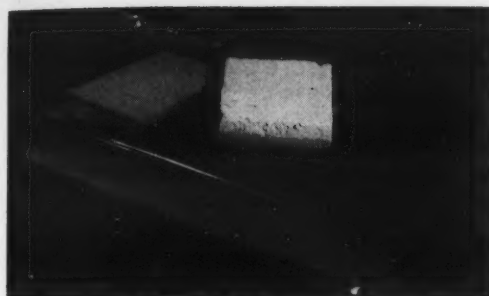
A wide variety of materials, ranging from paper to clay and concrete, can be made water repellent by treating them with a solution of the sodium salts of certain silanols dissolved in water. Material can be easily diluted with water and applied by brushing, spraying or mixing with paper or clay slurries.

Preliminary tests indicate that the material may someday be used to keep water from wetting paper plates and cups, glass and ceramic insulator bodies, asbestos cloth and paper, masonry walls, clay or



Effectiveness of XS-1 as a soil stabilizer is shown by immersing treated and untreated cylinders of packed damp clay in $\frac{1}{2}$ " water. Treatment consisted of two dips in 3% solution, or the equivalent of 0.1% spray application

When inquiring check CP 3932 on handy form, pgs. 2-3



XS-1 is also effective on magnesia pipe covering. A section treated with a 5% solution will float on water for days, while an untreated section of Magnesia pipe covering will sink in less than fifteen minutes

adobe buildings, and dirt roads as well as irrigation ditches.

Applied to dirt and clay, a solution of XS-1 reduces seepage into the ground and makes water drain off more rapidly. Eventually it may be used to save water that is now wasted in irrigation ditches and to reduce the cost of maintaining dirt roads and temporary landing strips by affecting a rapid drainage of water.

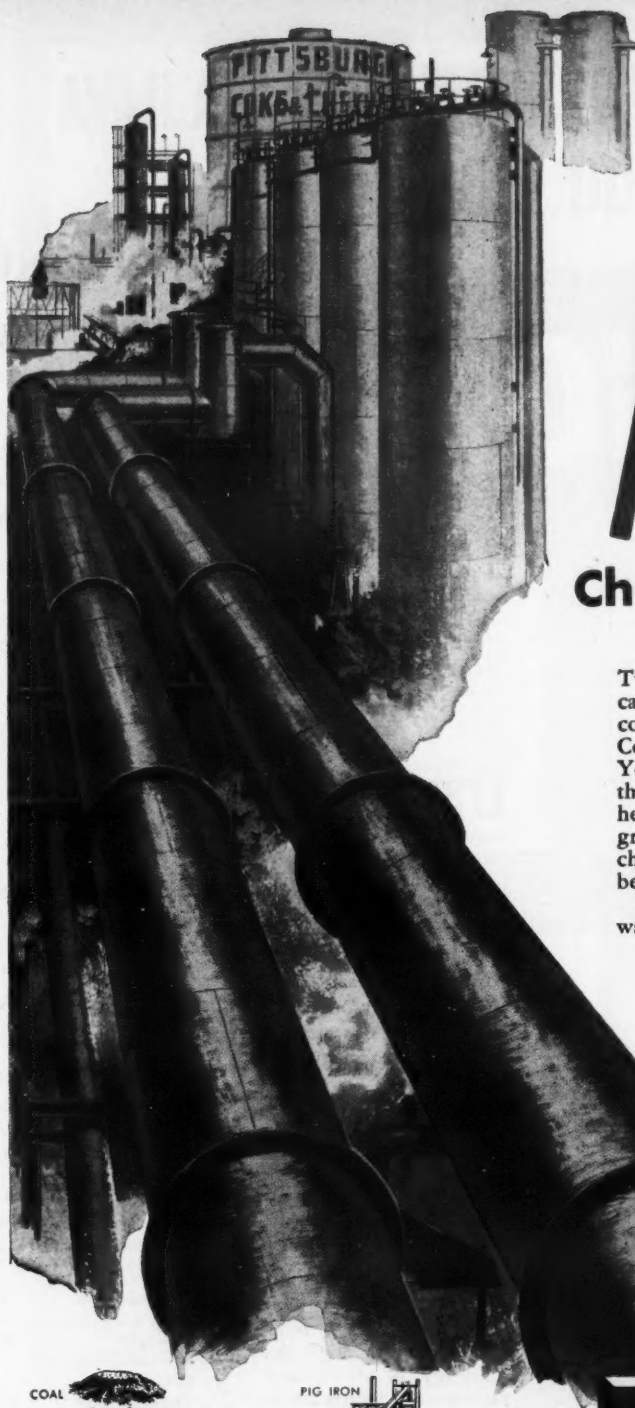
Cylinders of damp clay soil treated with a water solution of silanol mixture (XS-1) and an identical untreated cylinder were placed in a tray filled with water to a depth of $\frac{1}{2}$ ". The untreated cylinder was 80% disintegrated after 1 hour. On-



After 1 hour, the sample untreated for water repellency is more than 80% disintegrated. Treated sample is still intact. Even after 17 hours immersion, only the bottom $\frac{1}{2}$ " of the treated cylinder begins to absorb moisture and lose strength with the 0.1% XS-1 solution

ly the bottom $\frac{1}{2}$ " of the treated cylinder was wet after 17 hours of immersion. Such behavior might be expected of a clay soil road bed sprayed with an 0.1% concentration of XS-1.

(XS-1 is a development of the Dow Corning Corporation, Dept. CP, Midland, Michigan . . . or to obtain more information from manufacturer simply check CP 3934 on convenient Reader Service slip between pages two and three.)



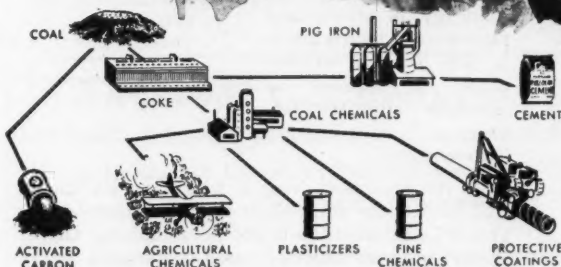
Main Line to New Chemical Wonderlands

Twenty-four hours a day, these giant steel pipes carry a rich cargo of chemical-laden gases from coke ovens to chemical plants of the Pittsburgh Coke & Chemical Company. Final destination? Your new crease-proof summer suit, the drug that takes the sneeze out of your hay fever, the herbicide that kills your weeds but not your grass . . . and perhaps 100,000 other coal chemical-made products that are, or soon will be, an important part of your life.

But there's an important "line" going the *other* way from our coke ovens, too. It carries coke to our blast furnaces for pig iron production. And slag from these furnaces is made into cement for highways and homes.

Diversified production? Yes, but completely integrated, too. For the operations of Pittsburgh's ten divisions are welded into a single, *basic* production pattern. The manufacturing efficiencies and coal-to-product quality control that result have made the Pittsburgh Coke & Chemical Company trademark a hallmark of dependability.

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COKE & CHEMICAL CO.

When inquiring check CP 3935 on handy form, pgs. 2-3

PICCOUMARON

Para-Coumarone-Indene Resins

Useful for Paints - Adhesives - Cements -
Anti-Rust Compounds - Floor Tile - Textiles
Waterproofings - and many other products

Available in ten melting points from a liquid to tough, brittle solids. Complete data and samples will be gladly sent upon request.



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DISTRIBUTED BY Pennsylvania Fulk Chemical Co., Pittsburgh 22, Pa.
and Harwick Standard Chemical Co., Akron 5, Ohio

When inquiring check CP 3936 on handy form, pgs. 2-3

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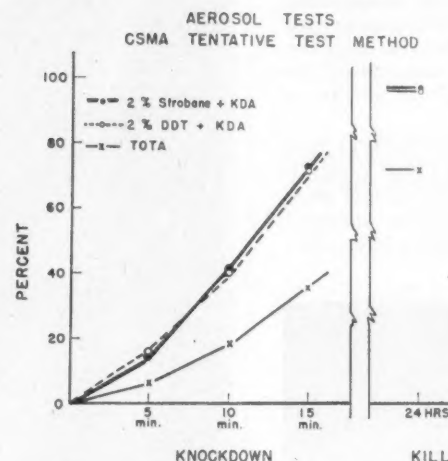
Tests reveal insecticidal effectiveness of chlorinated terpene hydrocarbons

**Safe to handle in use-concentrations,
aromatic solvent not required to hold
product in solution**

USES: Extensive laboratory tests have shown that Strobane can be prepared and used in practically all conventional forms. (Low vapor pressure, however, may limit its use in vaporizers.) Effectiveness has been demonstrated against many species of household and agricultural insects.

Liquid fly sprays, aerosols, emulsion concentrates, and livestock sprays represent the insecticidal formulations which are of most current interest. Strobane can be formulated into liquid fly sprays, livestock sprays and aerosols with no difficulty. Its solubility in deodorized petroleum hydrocarbon is 40% at room temperature. It requires no auxiliary aromatic solvents as is quite common with other chlorinated hydrocarbons.

Since the maximum level at which the insecticide will be used is somewhere in the neighborhood of 2-3%, solubility will not be a limiting factor. Higher viscosity white oils used in livestock sprays do not present any problem with the insecticide.



Aerosol formulations of Strobane* were compared with similar formulations of DDT**. Tests were conducted in a 1000 cu ft chamber, using approximately 100 flies per test and conducted in accordance with the CSMA Tentative Aerosol Test Method.

Both formulas contained the same percentage of ingredients. Results give direct comparison between Strobane and DDT with KDA as knockdown agent.

*Strobane, 2%		**DDT, 2%	
KDA		KDA	
Synergist	15%	Synergist	15%
Solvent		Solvent	
Diluent		Diluent	
Freon 11 & 12, 85%		Freon 11 & 12, 85%	

It has been reported that no difficulties have been experienced in manufacturing aerosols containing as high as 5% Strobane.

Emulsion concentrates containing approximately 25% Strobane are said to be relatively easy to prepare without the aid of an aromatic solvent. However, if concentrations higher than 25% are desired, an aromatic solvent should be considered. Research is underway to determine the most suitable emulsifying agents for concentrations higher than 25%.

Experimental work to date has shown that Strobane requires the addition of a knockout agent in both aerosols and fly sprays.

Features: Comprehensive toxicological studies with rats have shown that Strobane is non-toxic on chronic ingestion when fed in the diet at concentrations up to 500 ppm. In addition, it was found to be non-accumulative in action. Small quantities of 1% solution of Strobane in white oil may be used safely in contact with the skin.

As indicated, no aromatic solvent is required to

hold Strobane in solution. It leaves no white objectionable residue when applied as an aerosol. At low concentrations, odor of the insecticide is said to be undetectable.

Description: Strobane is the chlorination product of a mixture of terpene hydrocarbons and has a chlorine content of approximately 66%. It is a yellowish-amber viscous liquid soluble in most of the common solvents, and has a faint terpene odor.

Currently, only sample lots of Strobane are being offered from pilot plant production. A request has been filed with the Production and Marketing Administration in Washington for permit to sell commercial lots of the insecticide.

(Strobane is a product of the B. F. Goodrich Chemical Company division of the B. F. Goodrich Company, Dept. CP, Rose Building, 2060 East Ninth Street, Cleveland 15, Ohio . . . or for more information check CP 3938 on handy form, pages 2 and 3.)

Add five radioactives to carbon compound list

Five new chemicals have been added to the growing list of maker's radioactive carbon compounds. Currently available in $\frac{1}{2}$ and 1 millicurie packages (specific activity is 1 mc/millimole) are:

Adenine-8- C^{14} is a general constituent of the nucleic acids of nucleoprotein found in all cells. Its availability in specifically labeled form is expected to interest workers in the fields of metabolism and enzymology of nucleic acids and their derivatives.

Pyruvamide-2- C^{14} and pyruvamide-3- C^{14} are useful in the syntheses of labeled substituted succinic, tartaric and lactic acids. Pyruvic acid is a central compound in carbohydrate protein and also in fat metabolism.

Acetyl bromide-1- C^{14} and acetyl bromide-2- C^{14} are useful reagents as a means for introduction of a labeled acetyl group into alcohols, acids and amines. Compounds also serve as a starting point for the synthesis of a wide variety of other compounds.

(Products of Nuclear Instrument & Chemical Corporation, Dept. CP, 229 West Erie Street, Chicago 10, Illinois . . . or for more information check CP 3939 on handy form, pages 2 and 3.)

New ideas, applications for Li, its compounds

A new guide book on lithium and its compounds contains many new ideas and new applications. Lithium Guide Book is issued by the Foote Mineral Company, Dept. CP, 18 West Chelton Ave., Philadelphia 44, Pennsylvania. When inquiring specify CP 3940 on handy form, pages two and three.

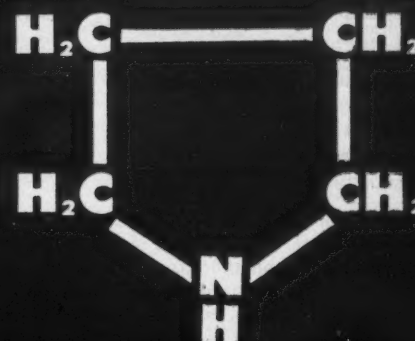
AVAILABLE IN DEVELOPMENT QUANTITIES FROM DU PONT

PYRROLIDINE

PHYSICAL PROPERTIES

Appearance	Colorless, mobile liquid
Odor	Penetrating, amine-like
Molecular Weight	71.12
Freezing Point (Tech. Grade)	-63°C.
Boiling Point	86-87°C.
Specific Gravity, 20/4	0.8618
Index of Refraction, N ₂₀ /D	1.4430
Flash Point (Tag Closed Cup)	3°C.
Solubility	Miscible with water and most organic solvents

In water forms base with dissociation constant of 1.3×10^{-9} .



This cyclic secondary amine is now being produced synthetically and is potentially available in commercial quantities. A wide variety of unusual compounds can be formed by reactions involving addition, condensation, acylation, and alkylation. Outstanding chemical properties include the following:

Moderately strong organic base. Solubilizer for acidic materials.

Functions as a catalyst and reaction medium for certain organic reactions.

Highly reactive, versatile chemical intermediate which may afford a practical way to make profitable products. For example:

- With carbon disulfide, yields rubber accelerators similar to those obtained from piperidine.
- With alkyl halides, gives N-alkyl pyrrolidines which can be converted to quaternary bases of possible use as sterilizers and surfactants.
- Useful for introducing the pyrrolidyl ring, a physiologically active nucleus found in many natural products such as alkaloids.
- With ethylene oxide, gives an alkanolamine, N-hydroxyethyl pyrrolidine.

A REQUEST on your company letterhead will bring technical bulletins and price information. Just write to E. I. du Pont de Nemours & Co. (Inc.), Electrochemicals Department, Field Research Section, Wilmington 98, Delaware.



When inquiring check CP 3941 on handy form, pgs. 2-3

MATERIALS

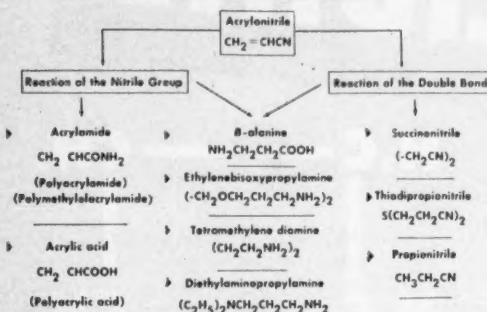
Outline big future for acrylonitrile as intermediate . . .

chemical reactivity based upon nitrile group, double bond and their combination

Newer uses stemming from acrylonitrile are based on its application as a chemical intermediate. The acrylonitrile molecule is unusual in that it has two strong points of reactivity that allow for chemical combination—the double bond and the nitrile

ACRYLONITRILE

NEW USES - CHEMICAL INTERMEDIATES



group. The chart shows several of the many derivatives that can be made from acrylonitrile. Chart is divided on the basis of reactions of the double bond, the reactions of the nitrile group, or a combination of both.

Nitrile group — Two of the more interesting derivatives which involve the chemical reaction of the nitrile group are acrylamide and acrylic acid. Acrylamide can be made by the acid hydrolysis of acrylonitrile, going through acrylamide sulfate. Both acrylamide and several of its derivatives such as methylene bis acrylamide, methylol acrylamide, and the substituted alkyl acrylamides show considerable promise in the resin and plastic field.

Polyacrylamide and polymethylolacrylamide, both water soluble polymers, are expected to provide strong competition for those markets now enjoyed by carboxymethyl cellulose and polyvinyl alcohol.

Acrylic acid may be produced by the direct hydrolysis of acrylonitrile or from acrylamide. It is currently being offered by this manufacturer as a 50% aqueous solution. It is being utilized as a source of higher acrylate esters. One of its derivatives, polyacrylic acid, another water soluble polymer, has found wide acceptance as a warp slashing size for nylon filament.

Double bond — On the right hand side of the chart are found succinonitrile, thiodipropionitrile, and propionitrile. Succinonitrile is of interest in resin production as a source of tetramethylene diamine, pyrrolidine and furmaronitrile — all resin intermediates. Thiodipropionitrile and propionitrile are noted for their solvent properties — former as a low-cost solvent, and the latter as a selective solvent for the separation of the aliphatic and aromatic hydrocarbons.

Double bond and nitrile group — Third group of acrylonitrile derivatives are those which involve re-



ARMOUR CHEMICALS MAKE ECONOMICAL AND EFFICIENT EMULSIONS FOR MANY FIELDS

By Dr. M. R. McCorkle, Technical Director,
Armour Chemical Division

Emulsions covering a vast number of uses are now possible and profitable through the use of Armour chemicals as emulsifiers. Today, emulsions are used as an improved method for applying many chemicals, and frequently afford a safer, more economical means of handling them than is possible using any other method.

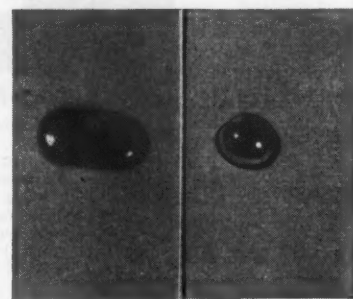
Armour has recently provided an extensive range of excellent emulsifiers, making available to the emulsion technologist a wide range of compounds and presenting possibilities almost without limit. It is important to remember that combinations of emulsifiers are often more efficient than any single emulsifier. We are always ready to help you solve your emulsion problems by suggesting new formulations, either of single emulsifiers or combinations.

In providing for the dispersion of grease, fat, wax, resin or other oil-soluble, water-insoluble products, the uniformity and dispersion of the material depends largely on the effectiveness of the emulsifier, rather than upon the mechanical agitation of the emulsion. Thus stable emulsions of fine particle size are possible with minimum agitation with the proper emulsifier.

Emulsions have proved particularly useful as an economical and efficient method for dispersing insecticides, parasiticides, and fungicides. In this application an oil-soluble but water-insoluble chemical, like DDT, chlordane or 2,4-D is dissolved in a suitable solvent, like xylene. An emulsifier is added to the solution. The resulting emulsifiable concentrate can be mixed with water in the field to form the spray liquid, a long-lasting emulsion which requires only minimum agitation.

Armour has developed cationic and non-ionic emulsifiers that are not affected by water hardness. Cationic emulsifiers tend to exhaust their oil phases on, and bind them to, many types of surfaces such as wood, animal hair, cellulose and concrete. This property enhances the effectiveness of insecticides by promoting adhesion and improving weather resistance. Arquad 2C is a strongly cationic surface active agent

that is an excellent emulsifier of this type. Ethomeens S/12 and S/15 can be combined in extremely low concentrations to form a very effective, mildly cationic emulsifier for 2,4-D isopropyl ester. The fact that these emulsifiers are not affected by water hardness greatly increases the range of their use since untreated water, in hard water areas, can be used safely and efficiently.



Spreading of the water on the left indicates surface wetting on conventionally emulsified Carnauba coating. Water drop on right—with no wetting—is on coating of Carnauba emulsified by new Armour chemical.

A combination of Armac T and Ethomeen S/25 has made possible improved water resistance and non-spotting characteristics of Carnauba wax emulsions for floor waxes, etc. The photograph shows the water resistance of this new Carnauba emulsifier (right) as compared to a conventional emulsifier (left). Both coatings were allowed to dry 15 minutes. Four drops of water were applied to each and photographed 1½ minutes later. The Armac-Ethomeen formulation gives permanent water repellency immediately upon drying.

Aromatic or chlorinated solvents can be emulsified in water to form degreasers or cleaners. Fabrics, glass or plastics can be coated with solvents, oil, wax or other compounds to provide such characteristics as water repellency, or even to give corrosion resistance. In cosmetic formulations

such as hair oils, hand creams or shaving creams, the desired bland, creamy effect can be enhanced by the choice of an efficient emulsifier which insures a long-lasting suspension of fine particle size.

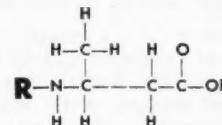
Recent work has produced simple answers to what have previously been considered difficult or unsolvable problems. A 40% fluid emulsion of paraffin with fine particle size is now possible. This emulsion will remain fluid at room temperatures. Another development uses Ethomeens to emulsify mineral oil in the presence of strong mineral acids, such as sulfuric or hydrochloric. And a clear emulsion of latus petroleum oil is possible using Ethomeen 142/20.

For complete information on these Armour emulsifiers, send the coupon for your free copy of Technical Bulletin F-2, "Armour Emulsifiers." Or we will be glad to discuss your emulsion problems and suggest formulations to solve specific problems involving dispersion, plating out or handling of chemicals.



N-COCO B-AMINO BUTYRIC ACID

This chemical is one of the comparatively small group of ampholytic surfactants which can act either as anionic or cationic agents. Compounds containing basic and acidic groups, as this does, are examples.



The compound is supplied as a 50% water solution of the internal salt (zwitterion) as shown above. Due to the presence of a secondary amine group and a carboxylic group, it is amphoteric, reactive with either an acid or a base. Selection of the proper organic or inorganic base provides a wide range of physical and chemical properties. For example, laboratory data show that the sodium salt of this substituted amino acid is an excellent suds promoter and foam stabilizer for synthetic detergents and also improves their detergent properties. Send the coupon with your letterhead for free samples.



ARMOUR CHEMICAL DIVISION

ARMOUR AND COMPANY • 1305 WEST 31ST STREET • CHICAGO 9, ILLINOIS

MANY USES FOR HIGH PURITY CAPRIC AND CAPRYLIC ACIDS



The availability of Armour's high purity caprylic (Neo-Fat 8) and capric (Neo-Fat 10) acids should interest many processors working on new products, particularly those involving organic synthesis. These two coco fractions are available with purity of 92% or above. The average composition of Neo-Fat 8 is 93% caprylic, 4% capric, and 3% caproic. Neo-Fat 10 averages 92% capric, 5% lauric, 3% caprylic acids.

SPECIFICATIONS

Neo-Fat 8: Titer, 16°C. max.; iodine value 1 max.; acid value of 387 to 392; moisture and unsaponifiable content both 0.2%; and color, Lovibond $5\frac{1}{4}$ ", 2R-20Y max.

Neo-Fat 10: Titer, 28 to 33; iodine value 1 max.; acid value of 323 to 329; moisture and unsaponifiable content both 0.2; and color, Lovibond $5\frac{1}{4}$ ", 2R-20Y max.

SOLUBILITY AND COMPATIBILITY

Both Neo-Fat 8 and 10 are soluble in the following (Neo-Fat 8 in all proportions): acetone, amyl acetate, benzol, butanol, carbon tetrachloride, dipentene, ethanol 95% and 100%, ethyl ether, ethylene glycol, kerosene, methyl cellosolve, turpentine, V.M.&P. naphtha, and xylol.

Both are compatible (at 60°C.) with the following: asphalt, beeswax, carnauba wax, ester gum, gum resin, linseed oil, paraffin wax, petroleum pale oil and soybean oil.

APPLICATIONS

Due to their exceptionally high purity, Neo-Fats 8 and 10 are excellent raw materials for producing derivatives of their respective acids, capric and caprylic, such as alcohols, aldehydes, ketones, esters, metallic salts, nitriles, amides, amines and others. Pure acids or their derivatives find use in essences, synthetic perfumes, flavors, disinfectants, anti-foaming agents, dye-stuffs, pharmaceuticals, high-boiling solvents for paints, varnishes, plastics, gums, and as manufacturing intermediates in synthetic organic compounds. Send for free samples of these versatile, high-purity fatty acids.

ARMOUR OLEIC ACIDS PROVED MORE STABLE



Armour's new low-temperature solvent crystallization method produces ester-free oleics that are resistant to oxidation and rancidity. The photograph above illustrates this stability. Both beakers contain batches of sodium soap which were held at 105°F. for six weeks. The one made with Armour Red Oil, on the left, showed excellent color retention and ended the test as sweet as the day it was made. The other, on the right, made with ordinary Red Oil, started to turn color within three days, became gumlike after two and a half weeks, and after three weeks it proved completely useless.

All six Armour oleic acids are produced by this crystallization method, using a

solvent which does not react with the raw materials. The extremely low temperatures employed guarantee a substantially lower saturated fatty acid content. Other features not found in ordinary distilled or pressed oleic acids are excellent color, low unsaponifiable content and high acid value.

Here are our oleic acids: Low Titer Red Oil (Neo-Fat 94-04), 8-11° Red Oil (Neo-Fat 94-10), Saponified Red Oil (Neo-Fat 88-18), Low Titer White Oleic (Neo-Fat 92-04), 8-11° White Oleic (Neo-Fat 92-10) and C.P. White Oleic (Neo-Fat 90-14).

These acids are available in 55-gallon drums and tank cars. Send the coupon with your letterhead for specifications and current prices.

ARMOX LPO PROVIDES LOW STEARINE CONTENT IN ACIDLESS TALLOW OIL

An economical low pour oil for use in producing steam cylinder and other lubricants, Armox LPO overcomes a major difficulty of other raw materials—sedimentation. When products are compounded with regular Acidless Tallow Oil, cold weather causes crystallization of stearines normally present in the raw materials, leading to sedimentation. Armox LPO is the result of requests by industry for a low stearine content low pour oil. Over the past year it has been tried and adopted by these customers. Specifications are as follows:

	MIN.	MAX.
F.F.A. (as oleic)	—	0.5%
Cloud point, °F.	—	70
Pour point, °F.	—	65
Flash point, °F.	585	—
Saponification No.	190	200
Iodine No.	70	80
Titer, °C.	—	37.5
Color, N.P.A.	—	2
Sp. Gr. 60°/60°F.	0.910	0.920

Armox LPO is available in drum and tank car quantities for prompt shipment. Send the coupon with your letterhead for free samples.

Please send me:

- Literature: ☐ Tech. Bulletin F-2, "Armour Emulsifiers" ☐ Oleic Acid Booklet
☐ Coconut Oil Fatty Acid Booklet
Samples: ☐ N-coco 8-amino butyric acid ☐ Neo-Fat 8 ☐ Neo-Fat 10
☐ Armox LPO ☐ Neo-Fat 94-04 ☐ Neo-Fat 94-10 ☐ Neo-Fat 88-18
☐ Neo-Fat 92-04 ☐ Neo-Fat 92-10 ☐ Neo-Fat 90-14

Name Title
 Firm
 Address
 City Zone State

When inquiring check CP 3942 on handy form, pgs. 2-3

action of both the double bond and the nitrile group. Of these, the foremost is beta alanine which is in commercial production as an intermediate in the preparation of a vitamin, calcium pantothenate, which is being used as an animal feed supplement.

Ethylene bisoxo propylamine and tetramethylene diamine have structures suggesting interest as intermediates for fibers, plastics and pharmaceuticals. Diethylaminopropylamine has found wide acceptance as an amine catalyst for the curing of epoxy type resins.

Although not shown in the chart, mention should be made of hydrolyzed polyacrylonitrile or sodium polyacrylate. This product can be readily made from acrylonitrile and shows promise as a viscosity modifier and stabilizer for water dispersions of both natural and synthetic latices and for other film forming applications. Its use as a soil conditioner has received wide attention. However, development work outside of the home-use field has not proceeded far enough to evaluate the eventual position these polymers may occupy in the agricultural market.

(Acrylonitrile is manufactured by the American Cyanamid Company, Dept. CP, 30 Rockefeller Plaza, New York 20, New York . . . or for more information check CP 3943 on handy form, pages 2 and 3.)

Versatile building block in organic syntheses — fumaric acid

Fumaric acid is currently available as a crystalline free-flowing granule. It is used in much the same manner as maleic anhydride in the production of resins with high melting points for surface coatings and ink. Non-corrosiveness and low toxicity are said to be important advantages of the product.

In the production of polyester resins, fumaric acid serves as the unsaturated dibasic acid building block for both addition and condensation polymerization. Extended uses include modifier for phthalic-type alkyds, upgrading of drying oils, formation of adducts with rosin and terpenes, and acidulant for gelatin.

(Product of Organic Chemicals Division of the Monsanto Chemical Company, Dept. CP, 1700 South Second Street, St. Louis 4, Missouri . . . or check CP 3944 on handy form, pages 2 and 3.)

Gives brief summary of info on crystalline urea

Possible applications, present uses, chemical properties, and physical properties of urea are reviewed in factual, 8-page bulletin. Data on solubility and specific gravity of solutions are also included.

"Crystal Urea" is issued by Nitrogen Div., Allied Chemical & Dye Corp., Dept. CP, 40 Rector St., New York 6, N. Y. When inquiring specify CP 3945 on handy form, pages 2 and 3.



Dependable Source for Chemical Raw Materials

Willard C. Kayser, Sales Manager, Hulman & Company, Terre Haute, Indiana, manufacturers of Clabber Girl Baking Powder.

Another famous name in baking powder relies on Wyandotte Bicarb

Cakes, pies, doughnuts, pastries, breads—they're only as good as the baking powder they are made with. And, good baking powder starts with high quality, uniform ingredients.

That's why Hulman & Company has used Wyandotte Bicarb for many years in their Clabber Girl Baking Powder—a best-seller.

During this time, their rigid tests have shown Wyandotte's Bicarbonate of Soda to be of consistent high quality and uniformity.

Like other leading food processors, you can benefit by using Wyandotte's easy-measuring, easy-processing, agglomerate-free Bicarb. Try it. Write for samples and data.

Wyandotte Chemicals Corp., Wyandotte, Mich. Offices in principal cities.



Wyandotte
CHEMICALS

Soda Ash • Caustic Soda • Bicarbonate of Soda • Calcium Carbonate • Calcium Chloride • Chlorine • Hydrogen • Dry Ice • Glycols • DDT • BHC • Synthetic Detergents • Carbose* (Sodium CMC) • Ethylene Dichloride • Propylene Dichloride • Aromatic Sulfonic Acid Derivatives • Soil Conditioners • Agricultural Chemicals • Other Organic and Inorganic Chemicals • *Reg. U.S. Pat. Off.

When inquiring check CP 3946 on handy form, pgs. 2-3

MATERIALS

Offering paste-fortified rosin size for paper . . .

some mills report they use 50% less of this size than they used of regular dark rosin types

A new grade of paste-fortified rosin size for the paper industry has been developed — Pexol 240. Size is made from dark rosin and provides a highly efficient size at low cost, according to manufacturer. Reductions up to 50% in the amount of size furnish have been reported by mills who have changed from conventional dark size to Pexol 240.

Lower size cost per ton of paper and paperboard has been the major factor in the swing to fortified size. One figure has it that paper mills have converted more than one-half of all size furnish to fortified size within past two years.

(Pexol 240 is a product of the Hercules Powder Company, Dept. CP, Wilmington, Delaware . . . or for more information check CP 3947 on handy form, pages 2 and 3.)

No need for dumping Cu plating baths . . .

agent converts impurities to useful cyanides

An agent which eliminates the need for periodic dumping of copper plating baths by removing harmful solution breakdown impurities and converting them to useful cyanides is announced. Copper Purifier is a concentrated solution of pure salt prepared especially for use in cyanide copper plating solutions. It adds no impurities to the bath.

Copper Purifier precipitates carbonates, chromates and sulfates as heavy, dense insoluble precipitate. Precipitate can be filtered out, or the solution can be decanted off the precipitate.

Addition of the agent sharply reduces cyanide consumption and increases the cathode efficiency of the solution. Addition of one gallon will remove at least 38 ounces of sodium carbonate or 50 ounces of potassium carbonate. It will increase the sodium cyanide content of the bath by at least 35 ounces or the potassium cyanide content by at least 47 ounces.

(Product of Sel-Rex Precious Metals, Incorporated, Dept. CP, 229 Main Street, Belleville 9, New Jersey . . . or for more information check CP 3948 on handy form, pages 2 and 3.)

Antiseptic for soaps rids 98% bacteria from the skin

A new antiseptic agent with highly effective deodorizing quality has been announced which also is capable of ridding 98% of skin bacteria. Known as Lorothisdol — 2,2'-thiobis (4,6-dichlorophenol) — the compound is expected to have utility in 300 different industrial products: personal deodorants and medical

MATERIALS

soaps, creams, lotions, colognes, antiseptic foot powders, baby powders, shaving creams and shampoos.

Lorothidol is reported to have good adherence to the skin, negligible toxicity and no odor that requires masking. Product combines readily with detergents, cosmetics and pharmaceutical products. Being insoluble in water, a slurry of the antiseptic is prepared and incorporated in a soap bar, for example. For addition to liquid soaps, it may be dissolved in alcohol, or similar solvent and metered in.

Fungicidal activity, in early tests, indicates product may be of value in the textile field for eliminating mildew, molds and fungi in fabrics.

(Product of the Hilton-Davis Chemical Company, Division of Sterling Drug Company, Dept. CP, 2235 Langdon Farm Road, Cincinnati, Ohio . . . or for more information check CP 3948A on handy form, pages 2 and 3.)

Offer startling materials for B-complex vitamin

Niacin U.S.P. and niacinamide U.S.P. are now in production by manufacturer of synthetic pyridine and other heterochemicals. Both products are essential in the production of the B-complex vitamin, vitamin mixtures, and other medicinals where their nutritional values are required.

(Products of the Reilly Tar and Chemical Corporation, Dept. CP, 1615 Merchants Bank Building, Indianapolis 4, Indiana . . . or for more information check CP 3949 on handy form, pages 2 and 3.)

Low-viscosity film former shows great resistance to UV light

Producing films of high strength and excellent flexibility both at normal and low temperatures, low-viscosity cellulose acetate butyrate will permit concentrations at spray viscosities of 20 per cent. This property makes for more economical formulation than is possible with previously available types. It produces solutions of high clarity and excellent shelf stability. This material is the only film former with high resistance to ultraviolet light that sprays easily.

Comprehensive data on the compatability of the low-viscosity butyrate film former with some 125 natural and synthetic resins, oils and waxes is included in 16-page technical booklet. Also listed are such characteristics as hardness, tensile strength, flexibility and effects of water immersion. Formulation suggestions for wood, paper, metal and plastic finishes, heat sealing adhesives and melt coatings are given.

Bul T 53-1907 is issued by Chemicals Div., Eastman Chemical Products, Inc., Dept. CP, Kingsport, Tenn. When inquiring specify CP 3950 on handy form, pages 2 and 3.

Sodium Tripolyphosphate

Tetrasodium Pyrophosphate

SODIUM PHOSPHATES

Trisodium Phosphate
Crystalline Monohydrate

Sodium Polyphos

Sodium Polyphos is Blockson's brand name for a water soluble Glassy Sodium Phosphate with the desirable characteristics of Sodium Hexametaphosphate and Sodium Tetraphosphate.

BLOCKSON IS ALSO A MAJOR PRODUCER OF...

SODIUM SILICOFLUORIDE	SODIUM ACID PYROPHOSPHATE
SODIUM FLUORIDE	CHLORINATED TRISODIUM PHOSPHATE
HYGRADE FERTILIZER	DISODIUM PHOSPHATE Anhydrous • Crystalline
	MONOSODIUM PHOSPHATE Anhydrous • Monohydrate

BLOCKSON CHEMICAL COMPANY JOLIET, ILLINOIS

When inquiring check CP 3951 on handy form, pgs. 2-3

MATERIALS

Vinyl resin intended for dry-blend feed of extruded items . . .

no need for internal mixers or open mills, thus labor and machinery costs are minimized

Uses: Designed for dry-blend feed of extruded products such as wire jacketing, tubing, welting, garden hose and similar items. Can also be used in open mills or Banbury mixers for calender operations.

Features: Capacity for dry-blend feeding affords fast and economical method for fabricating extruded plastic products. Elimination of internal mixers and open mills results in minimum labor and machinery costs.

Description: Marvinol VR-22 is a straight polyvinyl chloride resin of high molecular weight. It is said to rapidly absorb plasticizers in heated mixers and gives a dry, free flowing mix of good uniformity.

No bridging or packing is experienced in the extrusion feed. Fast drying time allows mixing cycles to be speeded up. Maker reports that it fuses quickly, giving extrusions that are smooth, uniform and free of "fish eyes".

VR-22 can be formulated with large amounts of plasticizer of varying types. Tests also show that compounds made from it have excellent heat stability.

(Development of the Naugatuck Chemical Division of the U. S. Rubber Company, Dept. CP, Rockefeller Center, New York 20, New York . . . or for more information check CP 3952 on handy form, pages 2 and 3.)

Glass fabric finds many uses in range of industries

According to an informative, 32-page bulletin, American industry is currently using 60 different constructions of broad glass fabric in the production of a wide range of industrial and consumer products. Serving as an introduction to the use of glass fabric in industry, pamphlet lists 19 industries and fields in which glass textiles are finding increasing production use.

Booklet discusses three basic fiber glass textile forms — broad fabrics, tapes, and parallel strand reinforcements. It contains a series of charts illustrating end-uses of these textile forms together with the properties prompting the use for each end-product listed. Pamphlet also includes charts of specifications for each of the three textile forms. Four basic after-treatments, or finishing processes, used on glass fabrics designed for industrial use are also outlined.

"Glass Textiles for Industry" is issued by Industrial Products Div., Hess, Goldsmith & Co., Inc., Dept. CP, 1400 Broadway, New York 18, N. Y. When inquiring specify CP 3953, pages 2 and 3.

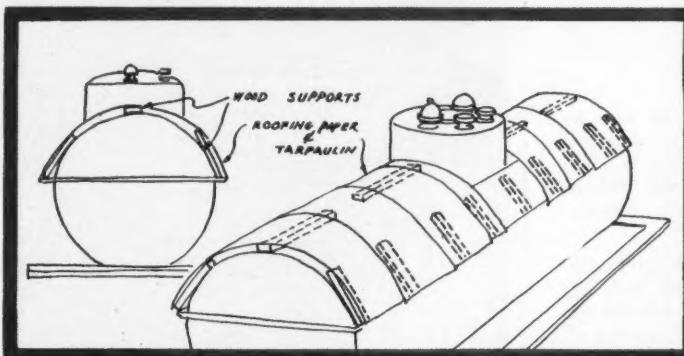
for your information...

brief summaries of helpful product news

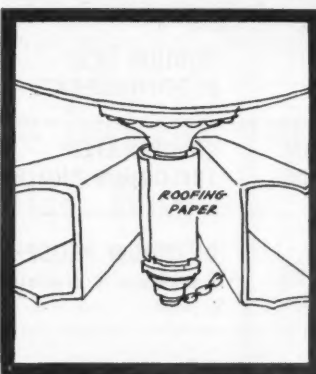
From Monsanto Technical Service:

Three Tips on How to Handle

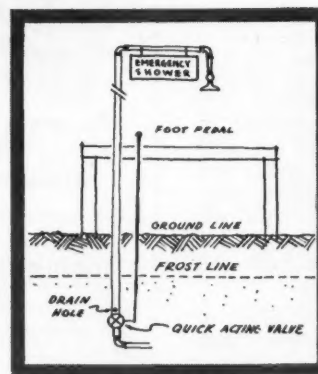
PHENOL



ELIMINATE "FREEZE-UPS" AT TOP OF CAR by spreading tarpaulin or covering of roofing paper over top of tank car. This easy-to-use procedure will promote rapid melting of phenol on the hard-to-reach upper surfaces of the car shell.



FASTER UNLOADING IN COLD WEATHER is made possible by simple cylindrical shield of roofing paper or cardboard around boot. Shield aids unloading by confining steam from hose to localized area, thus warming entire section to promote rapid melting. This procedure may save you plenty of valuable time in cold weather.



ALL-WEATHER SAFETY SHOWER placed at unloading facilities gives added insurance against worker injury. It can easily be constructed as shown in diagram and should have a valve below the frost line as well as a small drain hole above the valve. Such a shower will not freeze even in coldest weather.

For copy of new booklet on phenol handling, send coupon.

Scale Cut 50% on Tanker During Santolene C Test

In an 18-month test aboard an American flag tanker, Santolene* C — Monsanto's corrosion inhibitor—reduced scale formation fifty percent!

Here are the actual test results:

	No. 5 Port No Inhibitor	No. 5 Center Santolene "C"
Weight loss, gms....	No Ballast 19.86	No Ballast 9.55
Inches of penetration per year	0.0064	0.0030
	No. 6 Port No Inhibitor Ballasted	No. 6 Center Santolene "C" Ballasted
Weight loss, gms....	18.50	8.20
Inches of penetration per year	0.0059	0.0026

Thanks to the rust-inhibiting power of Santolene C, tankers may now be able to carry high-profit, clean oil products for longer periods of time. Less rust means less expense for replacing corroded steel. Costly out-of-service time for corrosion repair—as much as three to four weeks more than normal drydocking—is cut to the bone . . . For complete information on how this proved product can help you, mail the coupon today.

New Bulletin Available On Monsanto OMPA To Control Aphids and Mites

Octamethylpyrophosphoramide (OMPA, Schradan), a systemic insecticide available from Monsanto Chemical Company in commercial quantities, is the subject of a technical bulletin published by the company's Organic Chemicals Division.

OMPA, which was approved recently for spray applications to control aphids and spider mites on ornamentals, is absorbed by a plant and distributed throughout its system to kill insects which feed on plant fluids. The chemical dissolves readily in water and is easily applied as a simple solution.

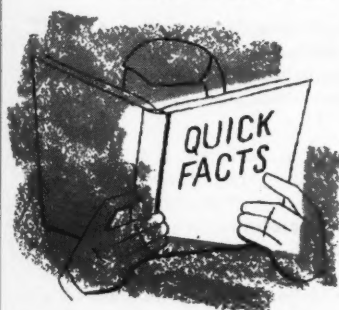
The new bulletin emphasizes the need to handle the highly toxic chemical with extreme care, and includes a section on the storing, handling and formulating of OMPA and other organic phosphates. In addition, it contains information about the application and effectiveness of OMPA as well as sample formulations for aerosol mixtures, liquid formulations and emulsifiable concentrates. For your copy of the new bulletin, mail the coupon.

Benzoic Acid for Fiber Dyeing

Benzoic acid is used to dye "Dacron"† polyester fiber. The acid "carries" the dyes into the closely knit structure of the fiber, which formerly did not absorb dyes readily at atmospheric pressure in the type of equipment normally used.

Monsanto benzoic acid is said to give the best levelling and all-round fastness of the several carriers in commercial use. For information on this new application, mail the coupon.

†Registered trade mark of E. I. Du Pont de Nemours & Co., Inc.



Sterox AJ, New Non-ionic Wetting Agent

Composition: Sterox* AJ is a non-ionic aliphatic polyoxyethylene ether-type surface-active agent.

Appearance: Sterox AJ is a light-amber liquid of medium viscosity which begins to cloud at 23° F. on cooling. The pour point is 3° F.

Odor: Faint and pleasing.

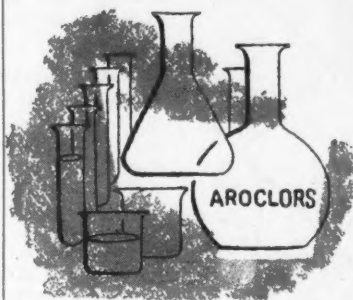
Specific Gravity: 1.002 at 25°C.

Stability: Sterox AJ is a non-ionic

surface-active agent exhibiting extremely high wetting and deversive properties. It is chemically inert, stable and active over a wide range of conditions.

Applications: Textile processing, laundering, paper rewetting, industrial cleaning, detergent sanitizers.

For complete information send for new bulletin P-147.

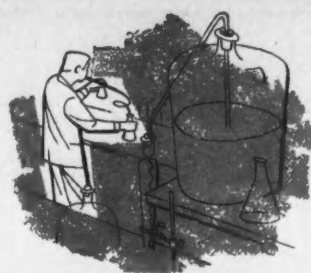


Monsanto Aroclors

Monsanto Aroclors* with their high boiling points, heat stability and chemical inertness are ideal distillation aids.

They are particularly useful as stable solvents because they can be reused several times before discarding or distilling, to restore the original refined state.

Moreover, the Aroclor acts as a stable heel in the still and allows all of the desired end product to be recovered. Other advantages include improved reaction yields and higher distillation recoveries. For more information send in the coupon.



Can Organophosphorus Compounds Help Solve Your Problem?

As a result of several years of specialized research, Monsanto is now offering laboratory quantities of several alkyl phosphites and phosphonates.

A technical data sheet on the following compounds is available:

Dimethyl phosphite
(CH₃O)₂POH

Trimethyl phosphite
(CH₃O)₃P

Dimethyl methanephosphonate
(CH₃O)₂P(O)CH₃

Dibutyl butanephosphonate
(C₄H₉O)₂P(O)C₄H₉

Bis (beta-chloroethyl)
vinyl phosphonate
(ClC₂H₄O)₂P(O)CH=CH₂

An ever-increasing number of uses for these compounds has been developed in the following fields:

Specialty Solvents
Plasticizers
Stabilizers
Oil Additives
Chemical Intermediates

To get your copy of the technical data sheet, send in the coupon today.



*Reg. U. S. Pat. Off.

MONSANTO CHEMICAL COMPANY 10/53
1702 South Second Street, St. Louis 4, Missouri

Please send information on: ☐ Santolene C
☐ Organophosphorus compounds
☐ Aroclors in distillation

Please send: ☐ OMPA Bulletin
☐ Benzoic Acid Bulletin
☐ New Phenol Handling Booklet
☐ Bulletin P-147

Name..... Title.....

Company.....

Street.....

City..... Zone... State.....

When inquiring check CP 3954 on handy form, pgs. 2-3

Envision 1-coat house paints based upon drying oils . . .

specially processed linseed and soya oils are fast-drying, high-wetting, washable

Uses: Drying oils for the protective coatings industry.

Features: Characterized by excellent non-penetration, washability, fast dry and high wetting power. Currently, they are under tests for 1-coat outside house paints as well as industrial finishes when used in conjunction with alkyds.

Description: Norlin Series of drying oils are produced by the Dymetide Process which is said to offer potentials for raw materials in the paint, varnish, lacquer, printing ink and caulking compound fields.

Now being produced on a tank car basis are Norlin L-70 and S-70, based on linseed oil and soybean oil respectively. They are employed in oil-type flat wall paints. Oils are highly polymerized and furnished at 70% solids in mineral spirits.

(Products of the Vegetable Oil Division of Cargill, Incorporated, Dept. CP, 200 Grain Exchange Building, Minneapolis, Minnesota . . . or for more information check CP 3955, pages 2 and 3.)

C₂H₂ derivative opens new uses in adhesives, coatings

A polymeric acetylene derivative is currently available in carload quantities with viscous and adhesive properties which suggest usage in sealing formulations and coating products of all types. It can also be cross linked with formaldehyde to form insoluble compounds. The high pressure derivative is the ammonium salt of PVM/MA (methyl vinyl ether — maleic anhydride copolymer). Material is a neutral, water soluble, hydrophilic colloid available as a white amorphous powder.

(Product of General Aniline & Film Corporation, Dept. CP, 230 Park Avenue, New York 17, New York . . . or for more information check CP 3956 on handy form, pages 2 and 3.)

Coloring of leather outlined in informative bulletin

Description of color differences, color of mixtures of dyes, adjusting a shade, correction of off-color lots, and formulation of a new color match are topics discussed at length in technical bulletin dealing with the coloring of leather. Several diagrams serve to illustrate a suggested scheme of color terminology when dealing with various dyes and their complex mixtures.

Technical Bulletin No. 829 is issued by Calco Chemical Div., American Cyanamid Co., Dept. CP, Bound Brook, N. J. When inquiring specify CP 3957 on handy form, pages 2 and 3.

Color Coded HARSHAW CHART OF THE ISOTOPES*



Chart Features

Element Name
Atomic Number
Atomic Weight, 1952 Revision
Atomic Mass Data
Thermal Neutron Cross Section
Element Symbol
Stable Isotopes Color Coded in Blue
Naturally Radioactive Isotopes
Color Coded in Green
Artificially Radioactive Isotopes
Coded by Half-life in 6 Colors
Radioisotope Half-life
Modes of Radioactive Decay
Radiation Energies in Million electron volts
Isomeric States
Isomeric Transitions
Nuclear Transmutation Code
Percentage Abundance of
Naturally Occurring Isotopes
Fission Data (thermal fission of ^{235}U)
Lithographed in 8 Colors Plus
Black and Gray
Corrected to February 1, 1953

Compiled and Edited by
JOHN R. BRADFORD, Ph. D.
Director Radiosotopes Laboratory,
Case Institute of Technology

*International copyright

8 Code Colors Identify Isotopes and Half Lives

The Harshaw CHART OF THE ISOTOPES is arranged to make available, in an easy to use form, all the useful information about isotopes. This new and unusual chart is designed and lithographed in ten colors to make possible rapid identification of isotope half-life and nuclear stability.

The CHART OF THE ISOTOPES is 60 by 48 inches with metal edges for hanging. Printed on Texoprint, a new plastic impregnated fibre paper developed for navy charts, it is washable, non-creasing and extremely tear resistant. The guide book sent with each chart outlines instructions for reading the chart, and summarizes many chart applications.

H-10950 CHART OF THE ISOTOPES—1953 edition, complete with explanatory booklet. (postage paid) . . . Each **\$10.50**
Outside the continental limits of the United States.
Rolled in mailing tube (air express prepaid) . . . Each **\$18.00**
Outside the continental limits of the United States.
Folded without metal edges (postage paid) . . . Each **\$10.50**

[Check or money order must accompany your order.]
Please do not send cash.

HARSHAW SCIENTIFIC DIVISION OF THE HARSHAW CHEMICAL CO., CLEVELAND 4, OHIO

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8920 Laisy Avenue
Cincinnati 13, Ohio
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Detroit 28, Mich.
9240 Hubbell Avenue
Houston 11, Texas
6622 Supply Row

Los Angeles 22, Calif.
3237 S. Garfield Avenue
Philadelphia 48, Pa.
Jackson & Swanson Sts.

MATERIALS

Offering newly developed plasticizer for vinyls . . .

report non-volatility, low extractability, excellent mill behavior, light resistance

Uses: Polymeric-type plasticizer for polyvinyl chloride and its copolymers.

Features: Following attributes are reported: non-volatility; low extractability; good low-temperature flexibility; excellent ultraviolet light resistance, mill behavior, and heat resistance; low viscosity; outstanding stabilizing properties.

Description: Admex 710 is an epoxy type plasticizer reported to be light colored, odorless and stable. It is applicable in plasticizer blends or as the sole plasticizer for vinyl resin compounding in flexible sheeting, plastisol and organosol dispersions, extrusions and moldings. Typical analysis is shown as follows:

Acid Number	1.0
Color (Gardner)	1-2
Viscosity @ 25°C, stokes	3.3
Specific Gravity @ 25°C	0.9903
Lb/gal	8.24
Refractive Index	1.47142
Average Molecular Weight	937
Kinematic Viscosity, centistokes	
35°F	2035
77°F	392
110°F	151
Electrical Characteristics,	
volume resistivity @ 25°C	
dry, ohm cm	1.5×10^{12}
after immersion, ohm cm	0.5×10^{12}

(Admex 710 is a development of the Archer-Daniels-Midland Company, Dept. CP, 600 Roroko Building, Minneapolis 2, Minnesota . . . or for more information check CP 3959 on handy form, pages 2 and 3.)

Clarifies advertising claims for liquid fertilizers

"Liquid Fertilizer Advertising" is the title of a 4-page bulletin prepared to assist in understanding the advertising claims for these products. Bulletin discusses formulas, the roles played by trace elements and sequestering and chelating agents, foliar application, hydroponics, vitamins, and root hormones. Issued by the National Better Business Bureau, Inc., Dept. CP, 405 Lexington Avenue, New York 17, New York.

ARE YOU A WRITER? . . . there is an opportunity in editorial work for a man who has an engineering or chemical background, some plant experience, a desire to travel and meet people . . . and a modicum of writing talent. If you're interested write: The Editor, CHEMICAL PROCESSING, 111 E. Delaware Place, Chicago 11, Ill. State experience, salary.

When inquiring check CP 3958 on handy form, pgs. 2-3

MATERIALS

Coarse, free-flowing acetophenetidin up^s drug uses

Uses: Used alone and in combination with many other therapeutic agents for analgesic and antipyretic formulations.

Features: Acetophenetidin is offered in the form of a coarse, free-flowing powder.

Description: This form of acetophenetidin is believed by manufacturer to be better suited to certain pharmaceutical preparations. Comparative mesh specifications are:

	% Retained
70 Mesh	12
100 Mesh	10-30
300 Mesh	30-65
325 Mesh	45-80

(Product of the Monsanto Chemical Company, Dept. CP, St. Louis 4, Missouri . . . or for more information check CP 3960 on handy Reader Service slip between pages 2 and 3.)

Reactive intermediate — 2-butene-1,4-diol

The development program on high pressure acetylene derivatives has currently made available (in limited quantities) 2-butene-1,4-diol — an unsaturated glycol.

Butenediol is a reactive chemical intermediate which cyclizes to dihydrofuran, hydroxylates to erythritol, and forms a variety of unsaturated polyesters and alkyds. It also reacts with dibasic acids to form plasticizers and takes part in many other reactions typical of compounds with the hydroxyl groups and the carbon-carbon double bond.

(Technical information or samples are available from Commercial Development Dept. General Aniline & Film Corp., Dept. CP, 435 Hudson St., New York 14, N. Y. . . . or for more information on product reader may simply check CP 3961 on convenient Reader Service slip between pages two and three.)

For more information on product at right, specify CP 3962 . . . see information request blank between pages 2 - 3.

IGEPONS serve every industry

The IGEPONS are today the most widely used surfactants in the world. First introduced by General Dyestuff Corporation more than twenty years ago, these pioneer surfactants have, through the years, become increasingly important to an ever growing number of industries.

Manufacturers of textiles, detergents, paper, cosmetics, industrial chemicals, agricultural chemicals, plastics and scores of other products have found an IGEPON or several IGEPONS essential for their operations.

If you have not investigated these versatile surfactants, let us recommend the IGEPON that is best suited for your product.



YOU CAN DO IT
WITH AN IGEPON

Send this coupon today for our free brochure on the complete IGEPON line.

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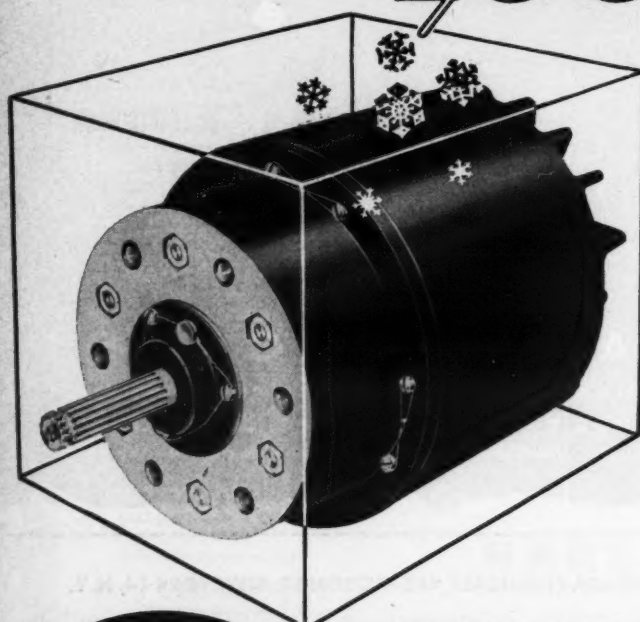
CP

AT THE FRONTIERS OF PROGRESS YOU'LL FIND

*the
magic
of
CO₂*

in environmental
test chambers

-100°F



Wherever testing programs call for low temperatures, Pureco CO₂ liquid stands out as a most effective and readily controlled refrigerant. Of the many advantages inherent in refrigeration with CO₂ liquid, these are of primary importance:

... Pureco CO₂ liquid brings temperature down rapidly—what's more, these low temperatures can be controlled by thermostat according to demands of specific tests.

... Pureco CO₂ liquid entails low capital equipment expenditures, whether load is 1 H.P. or 100 H.P.

... Pureco CO₂ liquid is made for use at your convenience—stored without loss, you can order it today for current or future use.

... Pureco CO₂ provides temperatures that readily meet and surpass the -70°F. military specification for testing equipment, such as electric aircraft motors.

Interest in Pureco CO₂ as a versatile refrigerant increases day by day. Write for details about its use with your applications.

PURECO

Pure Carbonic Company

GENERAL OFFICES: 60 EAST 42ND STREET, NEW YORK 17, NEW YORK

A DIVISION OF AIR REDUCTION COMPANY, INCORPORATED

When inquiring check CP 3963 on handy form, pgs. 2-3



MATERIALS

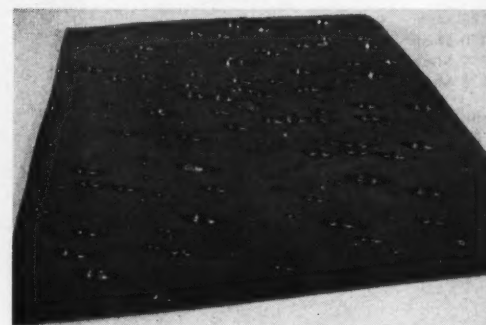
Feel and appearance of leather not appreciably altered by water repellent . . .

improves low temp flexibility of some leathers, increases resistance to oils, greases, fungi

Uses: As a silicone water repellent treatment for practically all types of leathers.

Features: Material imparts a high order of water repellency without appreciably altering appearance, feel or "breathing" characteristics of the leather. Treated leather remains water repellent even after prolonged aging or wear.

Indications are that the material also improves the low temperature flexibility of some leathers; increases resistance to oils, greases and fungus



High contact angle of water droplets on leather demonstrates water repellency which is imparted by silicone treatment

growth; and extends life of leather worn in the presence of alkalis, salts and chemicals. Silicone treatment is unaffected by surface coatings of wax or polish.

Description: Supplied at a 50% solids concentration in solvent, material is easily diluted and can be applied at about 15% concentration by dipping or swabbing. Where the leather can be treated by tumbling, as in a fatliquoring drum, greater water repellency is obtained.

Diluted material has good shelf storage life, and can be colored as desired with almost any oil soluble dye.

(Dow Corning 1109 is a product of Dow Corning Corp., Dept. CP, Midland, Mich. . . or for more information check CP 3964 on handy form, pages 2 and 3.)

New source listed for sodium perborate

Uses: Used extensively in the textile and dry cleaning industry for soaping of cotton print goods, developing of vat dyes, laundering of colored goods, promotion of soil removal, and whitening stained or yellowed garments.

In the cosmetic industry, sodium perborate is used

MATERIALS

as an oxidizing agent in cold waving preparations. It is also of interest in the formulation of tooth-powder, denture cleaners, and dusting powders. Has also been used for treatment of oral infections and as an antivesicant.

Particularly versatile are the applications in formulating household detergents and bleaches, where its ability to counteract yellowing of fabrics plus its detergent properties are of value.

Features: Contains 10% of active oxygen by weight.

Description: Specifications of maker's sodium perborate are listed as follows:

Formula	$\text{NaBO}_3 \cdot \text{H}_2\text{O}$
Molecular weight	154.1
Sodium perborate, % by wt.	96.2
Active oxygen, % by wt.	10.0
Solubility, gm/100 gm H_2O @ 25°C	3.4
Bulk density, lb/cu ft	56
pH in 1% aqueous solution	10.2
Stability	substantially no loss when stored cool, dry
Color, form, odor	white crystalline solid, odorless

(Buffalo Electro-Chemical Company, Incorporated, Dept. CP, Station B, Buffalo 7, New York . . . check CP 3965 on handy form, pages 2 and 3.)

Masks odors arising from dip silver polishes

A series of new masking agents has been developed for use in dip silver polishes. Diapromes P are said to cover the unpleasant odor resulting from the contact of silverware and phosphoric acid. Diapromes S perform the same function in polishes containing sulfuric acid. In general, the Diapromes are designed to improve the odor rising from the freshly opened dip silver polish bottle. Series includes violet, rose, pine and other suitable fragrances.

(Products of Dodge & Olcott, Incorporated, Dept. CP, 180 Varick Street, New York 14, New York . . . or for more information check CP 3966 on handy form, pages 2 and 3.)

Booklet clarifies many terms used in modern business

Containing 332 terms and definitions, informative booklet serves as a fundamental guide in the areas of cost accounting, time study, wage planning and administration, arbitration, methods engineering, sales planning and personnel practices. Each of the terms and expressions in the booklet is defined on the basis of its interpretation by the greatest number of experienced people using them professionally and successfully.

To obtain Study No. 104 remit \$1.00 direct to Society for Advancement of Management, Dept. CP, 411 Fifth Ave., New York 16, N. Y.

since 1915...



*Glycerine provides
the Resilience*

Crown Cork & Seal Company Inc., originators and world's largest makers of crown corks, have used Glycerine for nearly 40 years. Glycerine helps to keep the binder in the cork discs supple, assuring a dependable seal and trouble-free bottling.

Two properties make Glycerine a natural for use in Crown Cork & Seal's composition cork discs. Glycerine helps keep the discs resilient, so that they provide a tight, long-lasting seal.

What is equally important, Glycerine is non-toxic. It is accepted by medical associations and government agencies as safe for use in contact with foods.

Indeed, U. S. P. Glycerine is an important *ingredient* in many confections, flavoring agents, and other food products. Versatile Glycerine can serve as a sweetener, solvent, or blending agent. Its high viscosity imparts smoothness to mixtures, prevents graining.

A handy 16-page booklet, "Why Glycerine for Foods?" reviews Glycerine's unique range of properties and applications. For your copy, write Glycerine Producers' Association, 295 Madison Avenue, New York 17, N. Y.

Nothing takes the place of Glycerine

When inquiring check CP 3967 on handy form, pgs. 2-3

if your product is listed here...

It will pay to specify one of the
BIG 4 in oil and fat chemicals

ADM Sperm Oils

An ideal lubricant by itself or in combination with other oils. Used in sulfurized, sulfonated, and emulsified forms in the lubrication, metalworking, leather tanning, textile and paint industries. Excellent as a rust preventive.

Hydrofol Glycerides

Twelve specific types of pure hydrogenated triglycerides made from animal fats, marine oils, and vegetable oils, including Castor Oil. Highest quality; free from impurities. Absolute controlled uniformity. Resist oxidation and decomposition during processing or if stored for a long period.

ADOL Fatty Alcohols

Mixtures of pure alcohols—available in both saturated (cetyl or stearyl) and unsaturated. Made to exacting specifications, ADOLs can now be shipped in large quantities. Eight types available.

Hydrofol Fatty Acids

Distilled and fractionated to give you any one of fifteen different types of hydrogenated fatty acids made from animal fats, marine oils, and vegetable oils, including Castor Oil. HYDROFOL FATTY ACIDS improve quality and uniformity of your products. Types available with Iodine value as low as 1.0 max.

All available in Tank Cars,
Carloads or Less Carloads

PRODUCED IN ANY QUANTITY...SAMPLES TO SHIPLOADS

ARCHER • DANIELS • MIDLAND COMPANY
Chemical Products Division • 2191 West 110th St. • Cleveland 2, Ohio

When inquiring check CP 3968 on handy form, pgs. 2-3

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bulking compounds
candles
chemical intermediates
cosmetics
crayons
cutting oils
detergents
edible fat products
emulsifiers
esters
foundry partings
greases
leather oils
lube oil additives
lubricants
monoglycerides
paper coatings
penetrating oils
pharmaceuticals
plastics
quenching oils
resins
rubber compounding
rust preventatives
shampoos
shaving creams
soaps
stearates
sulfonated oils
textile size
tin andterne plating
water-proofing
wax compounds
wetting agents

write for
TECHNICAL BULLETINS
ON THE "BIG 4"
HYDROFOL PRODUCTS



MATERIALS

Properties of polystyrene emulsions closely resemble powder, pellet grades . . .

opening the way to protective coatings, reinforced plastics, special finishes

Polystyrene is currently available in a useful form: emulsions which are stable, water dispersions of high molecular weight resin. Polystyrene in these emulsions exists as minute spheres approximately 1/10 of a micron in diameter. Resin in this form, owing to its high molecular weight, closely resembles the chemical and physical properties of the dry powder or pellet grades of polystyrene now widely used for injection molding.

With polystyrene emulsions, it is now possible to produce protective coatings, reinforced plastics, and special finishes having many of the desirable characteristics of the objects obtained through molding — at practical cost.

There are four types or grades of these emulsions, designated as Emulsion R, M, P and F. While designed for different applications, they are basically similar and may in many instances be used interchangeably. M, R and F contain no plasticizer and produce a fine white powder with little or no tendency to coalesce when dried at room temperature.

Emulsion R has a higher solids content and is specifically recommended for production of reinforced plastics. Emulsion M has a low emulsifying agent content and is recommended for special finishes. Emulsion F is the only emulsion stable to freezing and is suggested for formulating water-base paints.

Emulsion P contains a plasticizer and when dried down will form a continuous, clear, glossy film useful as a protective coating and as a pigment binder.

(Bulletin C-3-180 completely describes these emulsions — Koppers Company, Incorporated, Chemical Division, Dept. CP, Koppers Building, Pittsburgh 19, Pennsylvania . . . or for more information check CP 3969 on handy form, pages 2 and 3.)

Discusses present and future trends in supply of sulfur, sulfuric acid

Survey of the raw material supply situation forecasts increased use of sulfur from natural and refinery gas, and greater utilization of pyrites to produce sulfur. According to the survey, pyrites likely will develop into a major source for sulfuric acid in the years ahead. Smelter gases and substitutes such as gypsum and calcium sulfate also will become increasingly important. Report also discusses processes which aim at substitution of other acids for sulfuric.

"Sulfur . . . A Raw Material Survey" is issued by Midwest Research Institute, Dept. CP, Kansas City, Mo. When inquiring specify CP 3970 on handy form, pages 2 and 3.

YOUR BIG NEWS IN PIGMENTS--WILLIAMS NEW KROMA RED!

Gives a far brighter mass color, much cleaner tint, is more easily dispersed than any red iron oxide pigment yet produced!

MEANS THAT YOU CAN NOW USE A LOW COST IRON OXIDE PIGMENT FOR WORK WHERE MORE BRILLIANT COLORS ARE REQUIRED FROM LIGHT RED TO DEEP MAROON

Chemical and Physical Properties

Fe ₂ O ₃	95.0% MIN.
Sp.G.....	4.80
Oil ABS.....	21-22
Hiding SQ. FT. per LB.....	850-1,000

KROMA RED APPLICATIONS:

Toy and furniture enamels
House and barn paints
Floor enamels
Resin and latex emulsion paints
Automotive finishes
Camouflage (high infrared reflectance)
Rubber products
Plastics
Textile finishes
Floor coverings
Building materials
Cement products
Leather finishes
Paper
... and many other uses.

Write today for complete technical report on Kroma Reds.
Address Department 22,
C. K. Williams & Co., Easton, Pa.

WILLIAMS
COLORS & PIGMENTS

C. K. WILLIAMS & CO.
Easton, Pa. • East St. Louis, Ill.
Emeryville, Cal.

108 SHADES AND TYPES OF
IRON OXIDE PIGMENTS

When inquiring check CP 3971
on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIALS

High thickening power offered by paint stabilizer . . .

remains usable for at least 1
year at room temperature

Uses: Sodium-free latex paint stabilizers and thickeners help eliminate the effluorescence and frosting which can occur in dark shades of paint.

Features: Products are said to remain usable for at least 1 year at room temperature. If frozen, they may be thawed at room temperature and stirred before use without loss of efficiency. They are ready to use as received or with simple water dilution. Their high thickening power generally allows use of less stabilizer and provides user with greater flexibility in paint formulations.

Description: All of these stabilizers have an alkaline reaction and are compatible with the usual types of synthetic latices, such as butadiene-styrene and pre- and post-plasticized polystyrene.

Products have a casein base, said to be generally recognized as the preferred stabilizer for synthetic latex paints, providing mechanical stability for long shelf life, good brushability and wet lap. Good leveling qualities with no brush marks, superior water resistance, and washability of film are characteristics of paints which include these stabilizer-thickeners.

(Cascoloid paint stabilizers and thickeners are products of Borden Co., Chemical Div., Dept. CP, 350 Madison Ave., New York 17, N.Y. . . . or for more information check CP 3972 on handy form, pages 2 and 3.)

Polyethylene glycol viscosities? See page 204.

For more information on product at right, specify CP 3973 . . . see information request blank between pages 2-3.

Keys to efficient production

Frequently the keys to more efficient production are found in more reliable chemicals.

This is one reason why more and more users of chemicals are turning to Niagara.

a case in point...

NIALK CAUSTIC POTASH: The production of new and improved types of synthetic rubber requiring potash soaps has led to an increasing demand for NIALK Caustic Potash because its soaps are more soluble than comparable soda soaps, and less viscous at the same solids concentration.

Constant research, strict quality control and a knowledge of the needs of industry have made this and other NIALK products leaders in their fields.

NIAGARA ALKALI COMPANY

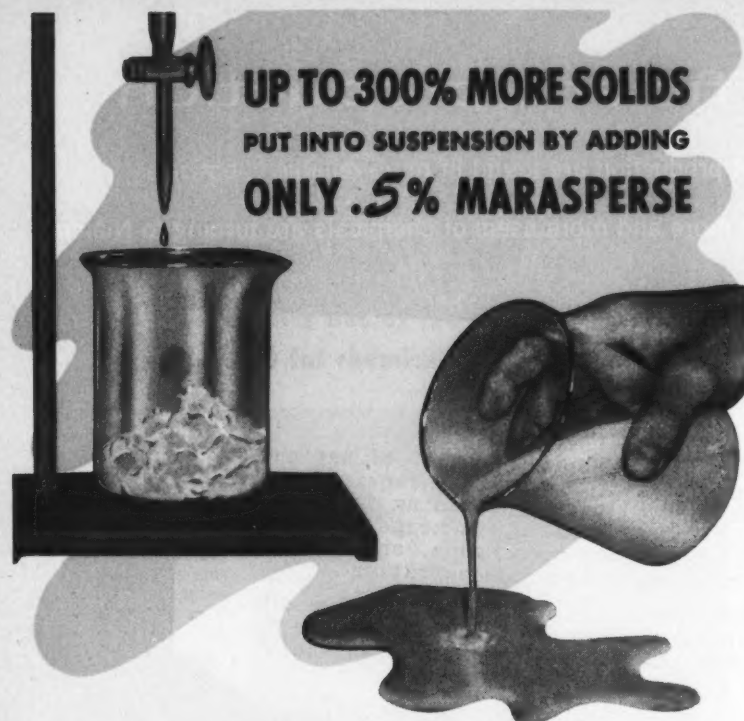
60 East 42nd Street, New York 17, New York

Nialk

LIQUID CHLORINE
CAUSTIC POTASH
CARBONATE OF POTASH
PARADICHLOROBENZENE
CAUSTIC SODA
TRICHLOROethylene

NIAGATHAL (TETRACHLORO PHTHALIC ANHYDRIDE)





MARASPERSE

THE *low cost*, MORE EFFECTIVE DISPERSANT

With the addition of as little as only .05% to a maximum of 3.0% of MARASPERSE, (based on weight of solids), from 35% to over 300% MORE SOLIDS MAY BE DISPERSED and maintained in fluid suspension.

MARASPERSE dispersants are MORE EFFECTIVE and considerably MORE ECONOMICAL to use. They are completely soluble in water; are non-hygroscopic, non-fermenting, non-caking, free-flowing powders.

MARASPERSE products are used in making water suspensions of organic pigments, sulfur, clays, titanium dioxide, carbon black, phenyl-beta-naphthylamine, etc., as dispersing and leveling agents for dyestuffs. Also as deflocculants and to increase strength in the manufacture of ceramic ware. As grinding aids and emulsifiers. In formulation of wettable powder insecticides, industrial cleaners, boiler water treatment chemicals. For mud control in oil well drilling operations.

Write for File No. 501. You will receive complete technical data on Marasperse products. Also available on request is Bulletin No. 119 entitled "Marasperse for Stabilizing Oil-In-Water Emulsions". Marathon has increased greatly its facilities for the production of Marasperse dispersants with the result that they are once again available to new users in virtually unlimited quantities.



MARATHON Corporation
CHEMICAL DIVISION • ROTHSCILD, WISCONSIN

When inquiring check CP 3974 on handy form, pgs. 2-3

MATERIALS

Reagents, intermediates are included in latest organic chemicals

Ten new organics have been added to this concern's chemical line. For sake of brevity, merely common name and recognized applications will be included here.

Chemical	Uses
2,2'-Biquinoline	Reagent for copper in analytical chemistry
Bixin	Food research, plant and animal biochemistry
Caffeic Acid	Forms esters and ethers. Synthesis of related compounds due to polyfunctional nature
Cholesteryl Oleate	Saponifications
Coumarone	For making coumarone-indene resins
1,1'-Dianthrime	Dye intermediate
Isoascorbic Acid	Biochemical and food research
Purpurogallin	Analytical chemistry, dye intermediate
2-Pyridoin	Reduces Fehling's solution, source of alpha-pyridil
Xanthosine	Intermediate

(Products of Bios Laboratories, Incorporated, Dept. CP, 17 West 60th Street, New York 23, New York . . . or for more information check CP 3975 on handy form, pages 2 and 3.)

Toughness and dimensional stability shown by modified polystyrenes

Readily molded by injection or extrusion techniques, modified polystyrenes impart toughness and dimensional stability to large and small parts fabricated of these materials. They combine elongation characteristics comparable to cellulosic plastics with stability and physical strength of polystyrene. They are widely applied in industrial and consumer products because of their greater elongation combined with dimensional stability, low water absorption, low specific gravity, excellent electrical characteristics and low cost.

Seven of the modified polystyrenes, four formulated to provide high elongation and high impact and three formulated for medium elongation and medium impact, are described in a 14-page technical bulletin. Information on parts manufacture, injection molding, compression molding, extrusion and finishing is presented. Two detailed tables list the properties of the materials as determined in tests conducted according to ASTM procedures.

Technical Bul C-3-161 is issued by Chemical Div., Koppers Company, Inc., Dept. CP, Koppers Bldg., Pittsburgh 19, Pa. When inquiring specify CP 3976 on handy form, pages 2 & 3.



easy does it... with DOW CORNING ANTIFOAM A

Optimum concentrations of Dow Corning Antifoam A against a wide variety of foamers are so small they are measured in parts per million. For instance:

- 4 p.p.m. (0.0004%) defoams cottonseed oil
- 1 p.p.m. (0.0001%) defoams fermenting wheat
- 1 p.p.m. (0.0001%) defoams neoprene latex
- 1 p.p.m. (0.0001%) defoams paper sizing
- .02 p.p.m. (0.000002%) defoams vat dyes

Used throughout the processing industry, Dow Corning Antifoam A cuts processing time; increases productive capacity; eliminates waste and hazardous overflow.

Odorless, tasteless and non-toxic, Antifoam A is safe, swift and by far the most economical defoamer you can buy.

DOW CORNING ANTIFOAM AF EMULSION.

Originally developed for use in the food industry, this new water-dispersible silicone emulsion is equally versatile, equally effective in industrial processing of aqueous foamers.

For further information on these materials, we invite you to . . .

see for yourself!

Mail coupon today for
FREE SAMPLE

**DOW CORNING
SILICONES**

Dow Corning Corporation
Midland, Michigan
Dept. BB-10

Please send me data and a free sample of—

- ☐ Dow Corning Antifoam A or
- ☐ Dow Corning Antifoam AF Emulsion

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

When inquiring check CP 3977
on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIALS

**Combine best prop's of
plastic and rubber
in new film . . .**

electronically seals to itself,
for homogenous assemblies

A new rubber film, called Vulcafilm, has been announced which combines the properties of plastics and synthetic rubber and can be electronically sealed to itself. Film permits the assembly of shapes or vessels of any size with fused, homogeneous seams throughout. The electronically welded seams are said to be stronger than the material itself, obviating need for cementing or taping seams.

Recently, the film was employed for making an oil tank diaphragm believed to be one of the largest all-rubber products ever made. Although unsupported by fabric in this particular application, Vulcafilm can be combined with many types of fabrics for reinforcement. Compound itself may be varied to obtain resistance to oil, gasoline, sunlight, heat, cold, abrasion, acids.

Other products made from the film include inflatable pillows to prevent damage caused by the shifting of freight cargo, tank liners for cooling water towers, etc.

(Vulcafilm is a development of the B. F. Goodrich Company, Dept. CP, Akron, Ohio . . . or for more information check CP 3978 on handy form, pages 2 and 3.)

Offering drum lots of PV isobutyl ether

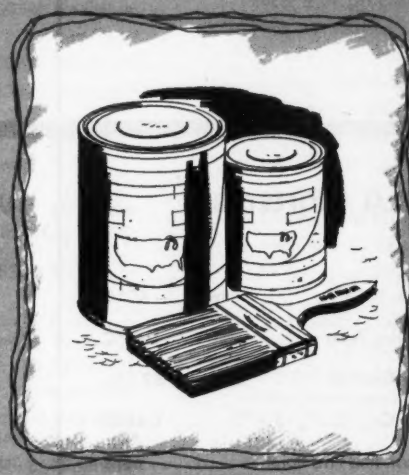
Drum lots of polyvinyl isobutyl ether are now available in three molecular-weight grades, ranging from a tack semi-solid to an amorphous white powder. It is suggested to be of utility in pressure sensitive adhesives and in special coating applications.

(Product of the Commercial Development Department of the General Aniline & Film Corporation, 435 Hudson Street, New York 14, N. Y. . . . or check CP 3979 on form, pages 2 and 3.)

For more information on product at right, specify CP 3980 . . . see information request blank between pages 2-3.

WITCO Dibutyl Phthalate

*. . . an outstanding plasticizer
for nitrocellulose lacquers*



ANALYSIS (TYPICAL)

Color (APHA)	50
Acidity, as phthalic	0.01%
Ester content	99.0%
Flash Point (COC)	340°F
Ash	0.005%

Shipped in 55-gallon drums
equipped with Tri-Sure Closures.

WITCO Dibutyl Phthalate*—a stable, colorless and odorless ester—is compatible in all proportions with cellulose nitrate and has high solvent power for cellulose mixed esters and other synthetic resins. Its high efficiency and compatibility have led to widespread adoption. **Write for Technical Service Report E-4.**

*Made in Witco's Chicago plant.



Ask to have
our Technical Service
Representative call.



WITCO CHEMICAL COMPANY

260 Madison Avenue • New York 16, N. Y.

Los Angeles • Boston • Chicago • Houston • Cleveland
San Francisco • Akron • London and Manchester, England

Hooker Chemical Guide
(ONE OF A SERIES)
USE this handy reference to save time
in selecting high-quality chemicals.

HOOKER SULFUR CHLORIDES

SULFUR DICHLORIDE

TYPICAL PROPERTIES

Formula: SCl_2
Molecular Weight: 103.0
Appearance: Brownish red liquid
with pungent odor

Pour Point below -78°C
Boiling Point: decomposes above 40°C
 Cl_2 Content 66%
Sp. Gr., $15.5^\circ/15.5^\circ\text{C}$ 1.638
Flash and Fire Point none

USES

As a chlorinating agent where use of elemental chlorine is not feasible; in chloridizing certain metallic ores; reagent in preparation of organic anhydrides, drying oils and rubber substitutes; reagent for drying coatings of ink, paint or varnish.

MATERIALS

Stabilizes vinyl resins for rugged heat cycles . . .

up to 1.5% effective for flexible vinyls, up to 5% effective for rigid

Uses: As a polymeric organo-tin stabilizer for vinyl resins.

Features: Reported to be outstanding as a heat stabilizer for prolonged cycles at high temperature ranges.

Description: Stabilizer 17M is a high boiling, non-distillable, yellow liquid with the following physical characteristics:

	typical
Odor	
Specific Gravity @ 25°C	1.115
Viscosity @ 25°C , cp	35
Refractive Index @ 25°C	1.502
Flash Point (open cup), $^\circ\text{F}$	360
Freezing Point, $^\circ\text{F}$	<40

For most flexible vinyl compounds, as little as 0.75% is sufficient to obtain heat stability. Where vinyls are exposed to very severe heat cycles, an increase to 1.0-1.5% based on the resin is suggested. For rigid vinyls, 17M is especially recommended for good clarity and is used in amounts of 3-5% based on resin, depending upon heat cycles and processing conditions.

17M is soluble in all the conventional vinyl plasticizers, including phthalate, sebacic and phosphate esters, fatty esters, etc.

(Stabilizer 17M is a development of the Advance Solvents & Chemical Corporation, Dept. CP, 245 Fifth Avenue, New York 16, New York . . . or for more information check CP 3982 on handy form, pages 2 and 3.)

Flexibility down to -120°F characterizes low temp silicone rubber . . .

shows little loss of desirable properties of strength, density and color

Designed for general molding, extrusion and calendaring applications, low temperature silicone rubber compound has advantageous properties such as ease of fabrication, good hot tear strength, low density and neutral color. Low temperature flexibility has been developed with little loss of desirable properties. Resistance to heat and excellent dry electrical properties are retained. Fuel and oil resistance of compound is good, but operation in aromatic or chlorinated fluids is not recommended.

Physical properties of the uncured compound show specific gravity to be 1.15 and the color — translucent, neutral. During shipment or storage it is recommended that the material be kept in clean covered containers at temperatures below 100°F . Best results are said to be obtained when material is used within six months following date of manufacture. It is definitely recommended that compound stored longer than six months be tested prior to use. Material normally requires room tempera-

SULFUR MONOCHLORIDE

TYPICAL PROPERTIES

Formula: S_2Cl_2
Molecular Weight: 135.0
Appearance: Yellow to reddish
heavy liquid with pungent odor

Pour Point below -80°C
Boiling Point 138°C
 Cl_2 Content 52.5%
Sp. Gr., $15.5^\circ/15.5^\circ\text{C}$ 1.6885
Flash and Fire Point none

USES

As an intermediate and chlorinating agent in manufacture of organic chemicals, sulfur dyes, and rubber substitutes; agent for cold vulcanization of rubber products; polymerization catalyst for increasing viscosity of vegetable oils.

For more information on items listed, drop a note on your letterhead to HOOKER ELECTROCHEMICAL COMPANY, 15 Forty-Seventh St., Niagara Falls, N. Y

From the Salt of the Earth

HOOKER ELECTROCHEMICAL COMPANY
NIAGARA FALLS • TACOMA • NEW YORK • CHICAGO • LOS ANGELES

**HOOKER
CHEMICALS**

When inquiring check CP 3981 on handy form, pgs. 2-3

MATERIALS

ture plasticizing ("freshening") on a rubber mill before processing.

Physical properties of the cured material are as follows:

	Oven cured 1 hr @ 300°F	Oven cured 24 hr @ 480°F
Specific Gravity	1.15	1.16
Density, lb/cu in	0.041	0.042
Hardness, Shore A	45 ± 5	50 ± 5
Tensile Strength, psi		
typical	800	750
minimum	600	600
Elongation, %		
typical	260	230
minimum	200	175
Tear Strength, Die B lb/in	70	45
Linear Shrinkage, % (measured on a 6 x 6 x 0.075" test slab)	4	6
Stiffness Temp, °F		
ASTM D797	-120	-120
Brittle Point, °F		
ASTM D 736	-120	-120

Hardness of material dropped slightly over 15 points on Shore A scale when temperature was raised from -120°F to 500°F. Electrical data was obtained at 77°F and 50% RH on standard 0.075 to 0.085 ASTM slabs oven cured 16 hr @ 480°F. A summary of typical electric properties follows:

Volume Resistivity, ohm-cm	2 x 10 ¹⁸
Dielectric Strength, volts/mil	440
Dielectric Constant, 60 cps	3.2
Power Factor, 60 cps	0.003

(SE-550 low temperature silicone elastomer is a product of Chemical Div., General Electric Co., Dept. CP, One Plastics Ave., Pittsfield, Mass. . . or for more information check CP 3983 on handy form, pages 2 and 3.)

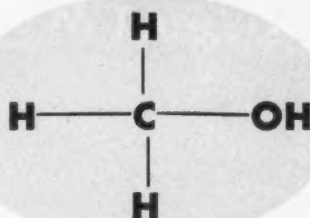
Mixing polymer and epoxy resins yields wide range of compounds

Compounds varying from elastomers to hard resins can be prepared by simple mechanical mixing at room temperature of liquid polymers and liquid epoxy resins. Characteristics contributed to the end-product include permanent flexibility, impact resistance, low shrinkage, good wetting properties and low temperature performance. These compounds are of interest to manufacturers in the potting, adhesive and coating fields.

Preliminary formulas and applications for these combinations are contained in an informative bulletin — "Thiokol Liquid Polymer-Epoxy Resin Combinations". Pamphlet is issued by Dept. E, Thiokol Chemical Corp., Dept. CP, 778 Clinton Ave., Trenton 7, N. J. When inquiring specify CP 3984 on handy form, pages 2 and 3.

For purity, uniformity and dependability ... Specify DU PONT METHANOL

CHECK THESE RIGID SPECIFICATIONS OF



DU PONT METHANOL

Methanol	99.85% Minimum
Non-volatile content	0.0010% Maximum
Acetone	0.003% Maximum
Hydrocarbon	To Pass Test*
Acidity, as acetic acid	0.003% Maximum
Alkalinity, as NH ₃	0.003% Maximum
Carbonizable Substances, A. P. H. A.	50 Maximum
Distillation Range at 760 mm., (A. S. T. M. Method D-268)	
first drop to dry	1.0°C Maximum Including 64.7°C.
Specific Gravity 25°/25°C.	0.78934 Maximum
Appearance, Clarity	Substantially free from suspended matter & sediment
Color, A.P.H.A.	5 Maximum
Odor	Characteristic and free from foreign odors
Permanganate Test	30 Mins. Minimum
<small>(All percentages on weight basis)</small>	
<small>*No clouding when diluted with 2 parts water</small>	

Whether you are using methanol as a solvent or intermediate . . . as an extractant, drying agent or in any of the other jobs that only methanol can perform so economically and efficiently . . . it will pay you to investigate and specify the standard of the industry—Du Pont Methanol.

Made to rigid specifications by the pioneer manufacturer of synthetic methanol, Du Pont Methanol is guaranteed pure (99.85%) synthetic methanol featuring a high degree of uniformity and dependability from shipment to shipment. When you specify and use Du Pont Methanol, you have the assurance that your supply will be of consistent high quality at all times . . . that variations in your products and processes based on the use of methanol will be held to a minimum.

Why not investigate the use of Du Pont Methanol in your business? We'll be happy to send you more information on this versatile, basic chemical—specifications, properties, suggested uses, etc. Just clip the coupon below or write on your letterhead for your copy of our new pamphlet, "Methanol—The Chemical With 1000 and 1 Uses." E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Wilmington 98, Delaware.

AVAILABILITY—Du Pont Methanol is available nationally through agents, shipped from strategically located stock points in tank cars; tank transports and tank wagons from some locations; and 55-gallon non-returnable steel drums.



SEND FOR THIS PAMPHLET TODAY!



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Better Things for Better Living
...through Chemistry

Polychemicals
DEPARTMENT
CHEMICALS • PLASTICS

E. I. du Pont de Nemours & Co., (Inc.)

Polychemicals Department 5810, Wilmington, Delaware.

Please send me more information on Du Pont Methanol—specifications, properties, uses, bibliography, etc.—including a copy of your new pamphlet "Methanol—The Chemical With 1,000 and 1 Uses."

Name _____ Title _____

Firm _____

Address _____

City _____ State _____

When inquiring check CP 3985 on handy form, pgs. 2-3

... AND HERE ARE MORE

New ANSUL Chemicals

ANSUL ETHER—H.A.

HYDROXY ANISOLE (Hydroquinone monomethyl ether)



Used in the manufacture of antioxidants and pharmaceuticals, in plasticizers, dyestuffs, and in organic syntheses.

ANSUL ETHER—D.M.B.

1,4 DIMETHOXY BENZENE (Hydroquinone dimethyl ether)



Used as a fixative in perfumes, as weathering agent in paints and plastics, in the manufacture of synthetic dyes, as a sun blocking agent in lotions and creams and in organic syntheses.

ANSUL ETHERS OF POLYGLYCOLS

ANSUL ETHER — 121

ETHYLENE GLYCOL DIMETHYL ETHER
 $\text{CH}_2\text{OCH}_2\text{CH}_2\text{OCH}_3$

ANSUL ETHER — 141

DIETHYLENE GLYCOL DIMETHYL ETHER
 $\text{CH}_2(\text{OCH}_2\text{CH}_2)_2\text{OCH}_3$

ANSUL ETHER — 161

TRIETHYLENE GLYCOL DIMETHYL ETHER
 $\text{CH}_2(\text{OCH}_2\text{CH}_2)_3\text{OCH}_3$

ANSUL ETHER — 181

TETRAETHYLENE GLYCOL DIMETHYL ETHER
 $\text{CH}_2(\text{OCH}_2\text{CH}_2)_4\text{OCH}_3$

INTERMEDIATES

for
organic
syntheses

PHYSICAL PROPERTIES:

Molecular Weight 124.13
Melting Point 53°C.
Boiling Point 243°C.
Solubility readily soluble in alcohol, benzene, acetone, ethyl acetate, others. Soluble in water.
Color white to colorless crystals or leaflets.
Odor pleasant fragrance

PHYSICAL PROPERTIES:

Molecular Weight 138.16
Melting Point 56°C.
Boiling Point 212.6°C.
Solubility readily soluble in acetone, ethanol, ethyl acetate and benzene. Insoluble in water.
Color white to colorless leaflets
Odor pleasant fragrance (sweet clover)

For more information write for File No. 802. You will receive additional data regarding these versatile fine chemicals.



ANSUL
Chemical Company

INDUSTRIAL CHEMICALS DIVISION • MARINETTE, WISCONSIN

Manufacturers of

INDUSTRIAL CHEMICALS, FINE CHEMICALS, LIQUEFIED GASES, REFRIGERANTS, REFRIGERATION PRODUCTS, AND FIRE EXTINGUISHING EQUIPMENT

MATERIALS

Has high flow, fast cure for bonding granulated wood

Uses: Recommended as a binder for granulated wood and other wood wastes for fabricating such articles as furniture, toys, etc.

Features: Maker reports that product combines two properties most sought after in such a binder — high flow and fast cure.

Description: Resinox 743 phenolic resin is finely divided and non-lumping. High flow characteristics are said to be evident at the initial application of heat and pressure. This affords a deep penetration of the wood mass, a particularly important advantage when heavy cross-sections are involved.

(Product of the Plastics Division of the Monsanto Chemical Company, Dept. CP, Springfield, Massachusetts . . . or for more information check CP 3987 on handy form, pages 2 and 3.)

Eight chemical intermediates available commercially for first time

Available commercially for the first time from this manufacturer are the following chemical intermediates:

α -Acetyl- α -Tolunitrile
Allyl Acetone
Chrysanthemum-Monocarboxylic Acid Ethyl Ester
2,5-Dimethyl Hexadiene-1,5
2,5-Dimethyl Hexadiene-2,4
Ethyl- α -Allylacetoacetate
Phenyl Ethyl Acetic Acid
Triglycollamic Acid

(Products of Benzol Products Company, Dept. CP, 237 South Street, Newark 5, New Jersey . . . or for more information check CP 3988 on handy form, pages 2 and 3.)

Complete and detailed information on all phases of caustic soda

Revised 64-page manual compiles a wealth of informative data on caustic soda, perhaps the most important basic chemical. Separate chapters are devoted to caustic soda production and uses, methods of manufacture, forms and grades, shipping and handling, comparative economics of solid and liquid caustic, and other pertinent data.

Extensive technical section includes tables and charts of various physical properties, dilution temperatures for various forms of caustic soda, and mixing data. Methods of analysis are outlined.

Form A-100 is issued on letterhead request to Columbia-Southern Chemical Corp., Dept. CP, 420 Fort Duquesne Blvd., Pittsburgh 22, Pa.

When inquiring check CP 3986 on handy form, pgs. 2-3

**Kills sprouting weeds,
lets crops grow**

An agricultural chemical has been announced which is reported to kill weeds as they begin to sprout and before they emerge from the ground. Called Alanap, it can be used safely on many truck garden crops. Properly used, this means that vegetable growers can reduce the costly and tedious work of hand weeding and crop cultivation by applying the chemical at the time the crop is planted, or a day or two thereafter. The crop will grow but the weeds will not.

Chemical is N-1 naphthyl phthalamic acid. Preliminary tests indicate that it has low toxicity to warm-blooded animals. No adverse effects have been observed in handling large quantities both in the laboratory and in the field. Standard spray equipment delivering 25-100 gal/acre can be used for broadcast spray — recommended dosages range from 4-8 lb/acre.

Alanap has been used successfully against pigweed, purslane, quickweed, lambsquarter, chickweed, ragweed, carpetweed and crabgrass in test crops such as cucumbers, sweet potatoes, peanuts and many more.

(Product of the Naugatuck Chemical Division, United States Rubber Company, Dept. CP, Rockefeller Center, New York 20, New York . . . or for more information check CP 3989 on handy form, pages 2 and 3.)

**Will dissolve 39 times
its volume of C₂H₂**

Another recently announced high pressure acetylene derivative is N-methyl-2-pyrrolidone. Product is a selective solvent for use in gas streams. It is capable of dissolving thirty-nine times its volume of acetylene at room temperature and atmospheric pressure. It is also a solvent for a number of resins including those ordinarily difficult to dissolve: acrylonitrile, ethyl cellulose, polyethylene, polystyrene and nylon molding powder.

(Product of the General Aniline & Film Corporation, Dept. CP, 230 Park Avenue, New York 17, New York . . . or for more information check CP 3990 on handy form, pages 2 and 3.)

**Tabulates properties and applications of
aluminum pigments, grain powders**

Recently revised 8-page bulletin lists physical properties for 12 leafing grades and 5 non-leafing grades of aluminum paste, 5 aluminum powders and 4 grain aluminum powders. Numerous uses are also suggested for each product.

Form 102 is issued by Metals Disintegrating Co., Inc., Dept. CP, Elizabeth B, N. J. When inquiring specify CP 3991 on handy form, pages 2 and 3.

By the world's largest producer of synthetic detergent raw materials!!

DETERGENT ALKANE • DETERGENT SLURRY

DETERGENT D-40 • DETERGENT D-40 SF • DETERGENT D-40 FG

DETERGENT D-60 • PURIFIED SULFONATE L • PURIFIED SULFONATE LZ

SODIUM SULFONATE NO. 5 • WETTING AGENT • WETTING AGENT S

DISPERSANT NI-W • DISPERSANT NI-O

Other Oronite Products

Lube Oil Additives
Cresylic Acids
Gas Odorants
Naphthenic Acids
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Moving-bed oil decolorization requires only half the clay of static-bed method

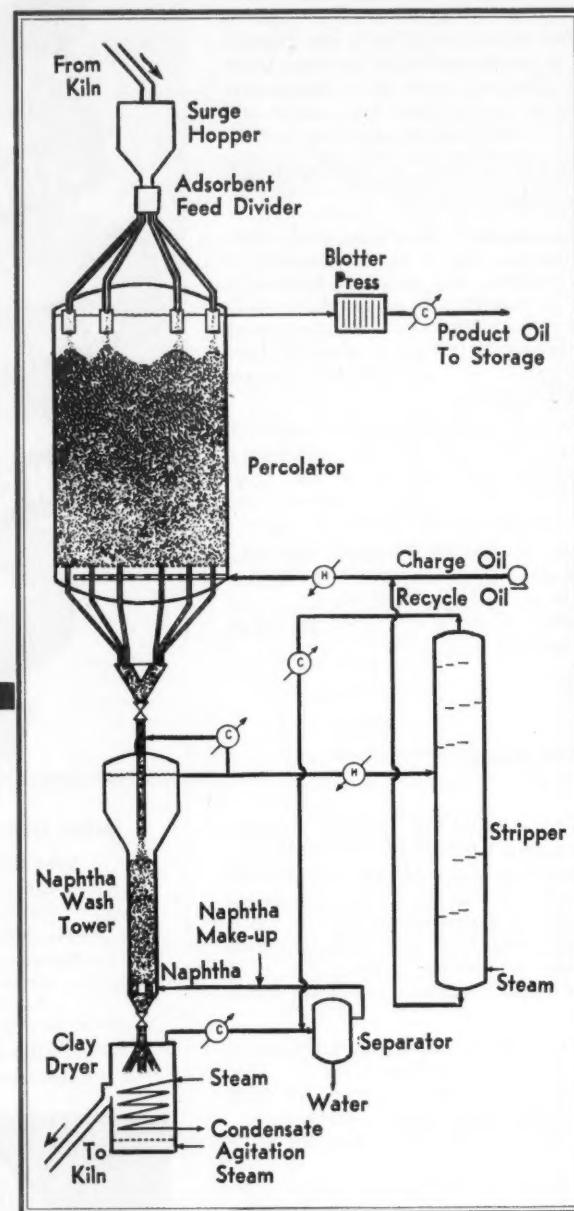
Continuous countercurrent washing of spent clay with naphtha recovers entrained oil

THERMOFOR Continuous Percolation (TCP) is the name given to a recently announced process for decolorizing lubricating oils and waxes. Using conventional 10 to 60 mesh clays, including bauxite and Fuller's earth, the process boasts a yield (bbl oil/ton of clay) about double that of static-bed percolation — mostly because of a more efficient continuous and countercurrent washing step in which the oil is removed from spent-clay slurry by naphtha. This continuous wash removes very little of the color bodies from the spent clay, and produces no "steamings" (dark oil suitable only for fuel-oil blending).

Naphtha dilution of feed stocks, to adjust viscosity, is not necessary in this process. Design is such that viscosity can be controlled simply by temperatures in the preheater and percolator . . . 125°F for transformer oils, and 350°F in the case of heavy residual stocks, for instance. Special precautions are not required when processing microwaxes and trans-

Pilot Plant Data for TCP Treatment of Three Typical Stocks

Stock	A*	B*	C*
Vol % naphtha in charge to percolator**	35	50	50
Type of Fuller's earth	"Equilibrium"	Fresh-burned	No. 1-burned
Clay mesh size	30-60	30-60	15-30
Product rate			
Bbl/day	388	837	630
Bbl/day/sq ft	7.7	16.6	12.5
Color of charge, ASTM	8	7-	7-
Color of product, ASTM	5-	5	5-
Oil inlet pressure, psig	10.5	11.9	24.0
Operating temp., °F	103	107	77
Viscosity of oil stream, cps	4.0	4.3	5.2
Yields, Bbl oil/ton clay			
TCP	53	193	87
Lab static***	49	156	75
Plant static	14	64	39
Ratio of yields			
TCP/lab static	1.08	1.24	1.16
TCP/plant static	3.7	3.0	2.3



Simplified flowsheet of TCP process employed in the continuous decolorization of oils

*Stock A is SAE 30 Mid-Continent distillate, 65 SUV @ 210°F; B is solvent-treated Mid-Continent bright stock, 145 SUV @ 210°F; and C is solvent-treated Mid-Continent bright stock, 95 SUV @ 210°F.

**Stocks were percolated in naphtha solution solely for convenience. In commercial installation, dilution with naphtha would not be required.

***Laboratory static percolations were made using the same oil and clay as in the pilot plant runs. These yields were calculated from those results.

former and turbine oils; procedure can be essentially the same as when decolorizing lube oils.

Schematic flow diagram with this article shows all main parts of the commercial process except the Thermoform clay burning kiln and the elevators and conveyors for taking the clay to and from the kiln. This kiln was introduced to the field in 1939, and has been operated by several oil companies.

In the TCP process, oil to be decolorized is preheated and introduced into the bottom of the percolation tower through a multi-nozzle distributor. Regenerated clay from the kiln is fed into the top of the percolator and distributed over the cross-section of the tower by a number of feed legs. It falls through the oil in the settling zone and merges with the clay bed. Rate of clay feed and the rate of draw-off through a multi-pipe system are controlled to maintain a constant bed level.

Decolorized product oil is taken overhead through a blotter press to remove traces of entrained clay, cooled and sent to storage. The spent clay is discharged from the bottom of the tower with about an equal volume of oil and drops into the top of the wash tower. Here, it is washed countercurrently with naphtha in an operation similar to the percolation step.

Naphtha-oil solution taken overhead is charged to a stripper where naphtha and oil are separated. Stripped oil is recycled to percolator with the fresh feed and the naphtha is returned to the wash system. A portion of the wash tower overhead stream may be cooled and recycled if necessary to prevent boiling of naphtha by contact with the hot oil-clay slurry in top of wash tower. Control of bed level in wash tower is similar to that in percolator.

Washed clay then enters a dryer for removal of the small amount of naphtha it contains. The dryer consists of a simple tank with steam heating coils and provisions to agitate the clay by means of steam (or flue gas) entering at the bottom. Naphtha vapor is condensed and recycled to the washing system, and the dry spent clay goes to the Thermoform kiln.

As contrasted with steamed clay in conventional percolation, which usually contains 10 to 12% moisture, the clay emerging from the TCP dryer is moisture-free because the dryer temperature is 350 to 400°F. This is advantageous because moisture has a tendency to deactivate the clay.

The process has good flexibility — several stocks can be processed in the same unit. By proper scheduling of stocks, it is possible in most cases to eliminate slop-oil cuts during changeover periods.

In some cases, the percolation and washing sections may be divided into two or more small units rather than one large one. Such division is desirable when processing a large variety of stocks, particularly special stocks such as waxes, which involve relatively small volumes or which are extremely sensitive to contamination. In such a plant, a common dryer and kiln would still be used.

(Continued on page 51)



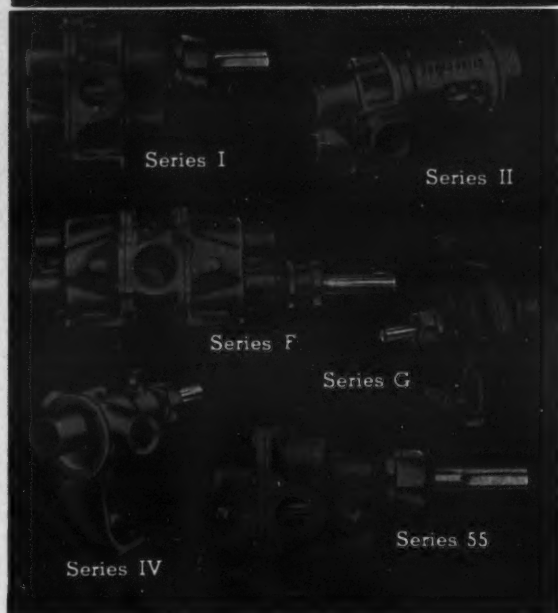
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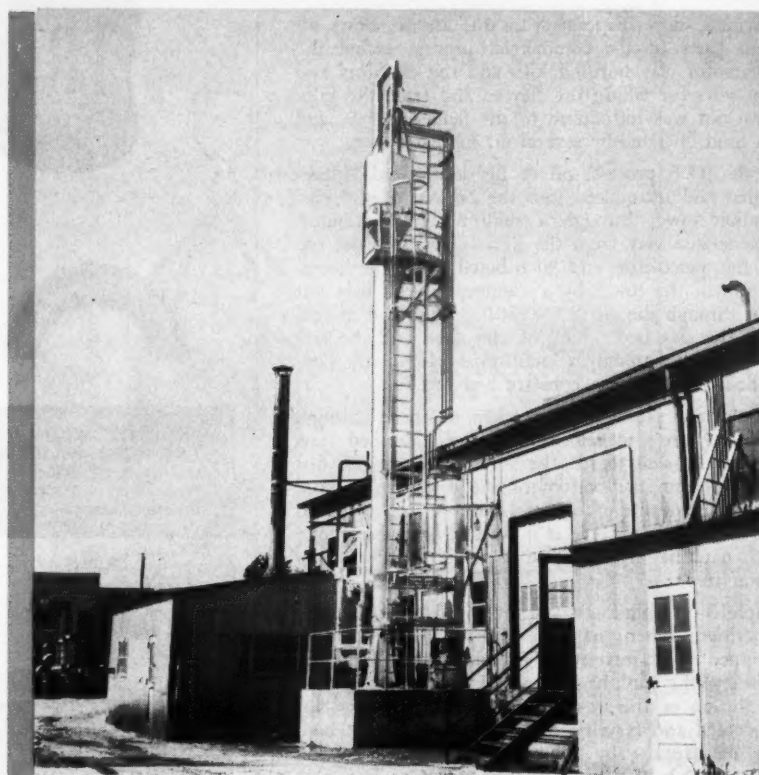
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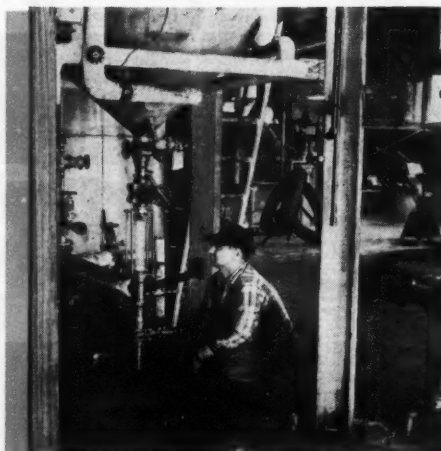
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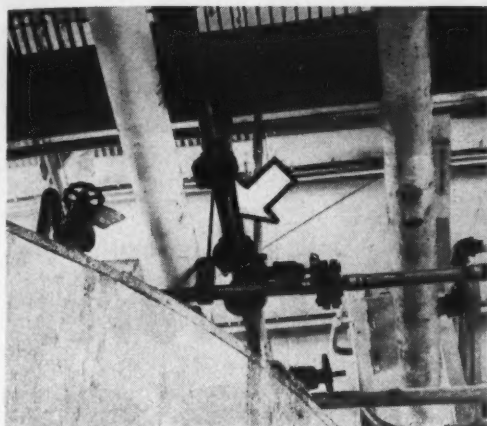


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from caustic wash tank

Stripper, caustic wash tank and filter improve product clarity, will permit processing of esters new to company

MORE esters for the plastics, paint and lacquer, and cosmetics industries are now flowing from the Chicago plant of Witco Chemical Company . . . thanks to the addition of a steam stripping column. The column has doubled, in some cases tripled, production because the stripping operation is no longer conducted in the reactor. That vessel can now be used only for reacting the alcohol with the acid to get the crude ester, which is then pumped out to make sufficient room for the next batch.

In addition, the column and attendant equipment in



Flanged "drop-out spool" (arrow) will prevent unintentional intermixing of ester batches

the plant improves product clarity and makes it possible to process esters which could not be produced satisfactorily by the older method. Much of the credit for clarity goes to a new caustic wash tank and a Sparkler horizontal-plate filter.

Witco is already making quite a variety of esters, as shown in the table which lists those that are now being produced in commercial quantities. Plans are afoot to seriously consider producing sebacates.

The plant, including the stripper, is generally of typical design. Stainless steel is used everywhere an ester-water mixture contacts the equipment, thus preventing discoloration of the product. Explosion-proof electrical equipment and pneumatically operated instrumentation are used throughout because of the presence of flammable liquids and vapors. The stripping column itself is packed with Berl saddles. Steam flow is automatically proportioned to the crude ester flow by a proportioning controller (Foxboro).

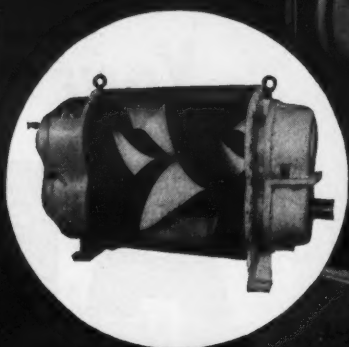
One headache of batch operation — accidental and detrimental mixing of batches — is eliminated at the Witco plant, even though the pipelines to various

(Continued on next page)

TYPICAL ESTER CHARACTERISTICS

	Color, APHA	Acid Number	Odor
Butyl stearate,			
Cosmetic grade	50	0.1	None
Technical grade	300	0.2	Mild
Dibutyl phthalate	50	0.1	Mild
Di-(2-ethylhexyl) phthalate (DOP)	50	0.1	None
Di-iso-octyl phthalate (DIOP)	50	0.1	None
Di-(2-ethylhexyl) adipate (DOA)	50	0.1	None
Di-iso-octyl adipate (DIOA)	50	0.1	None
Dibutyl adipate	50	0.1	None

NEW in principle ... design ... efficiency



ROOTS-CONNERSVILLE *SPIRAXIAL* COMPRESSORS

To its widely accepted *dual-ability* line of Rotary Positive and Centrifugal equipment for handling gas and air, Roots-Connorsville announces the new *SPIRAXIAL* Compressors. Based upon the long-proved rotary blower, originally conceived by the Roots Brothers in 1854, but entirely new in operating principles, the *SPIRAXIAL* design offers several outstanding advantages over present types of compressors, within its range of use:

1. Peak efficiencies at discharge pressure determined by requirements.
2. No internal lubrication used or needed.
3. Minimum of servicing, with wearing parts quickly accessible.
4. Low noise level—smooth operation.
5. Light weight.

In operation, two "spirotors" revolve in opposite directions, and cause internal compression of the air or gas. This principle of internal compression leads to higher efficiencies, which begin to be pronounced at about 10 psi and are more pronounced at higher pressures, with internal compression performance up to at least a 3 to 1 ratio.

These new *SPIRAXIAL* Compressors increase the flexibility of the Roots-Connorsville line and offer possibilities for economy and efficiency which are well worth investigating. We shall gladly study your requirements and make definite recommendations. Descriptive bulletin No. SC-152 on request.

ROOTS-CONNERSVILLE
*Exclusive Specialists in
Handling Gas and Air*



ROOTS-CONNERSVILLE BLOWER

A DIVISION OF DRESSER INDUSTRIES, INC.
1053 Richmond Ave. • Connorsville, Indiana

When inquiring check CP 3995 on handy form, pgs. 2-3

(Continued from preceding page)

tanks are interconnected. The remedy: flanged "drop-out spools." These spools, made up from a short length of pipe with a flange at either end, are inserted in key places of the piping network. If the batch shouldn't be sent through certain lines, the spools are quickly taken out of those lines. The gap can be temporarily blind-flanged, if desired.

(Further details on esters may be obtained from Witco Chemical Company, Department CP, 260 Madison Avenue, New York 16, New York . . . or for more information check CP 3996 on handy form, pages 2 and 3.)

Bulletins-file describes Teflon, Kel-F products

File of engineering bulletins which describe company's Kelon-F (Kel-F, Fluorothene) and Kelon-T (Teflon) products, and facilities for manufacture, is comprised of No. 1001 through 1005, and 1009 through 1014. Complete file is available from Dept. F. W. S. Shamban & Co., Dept. CP, 11617 W. Jefferson Blvd., Culver City, Calif. When inquiring specify CP 3997 on handy form, pages 2 and 3.

High-speed efficiency in diversified jobs is pneumatic trait

In recent years, there has been a diversification of industrial installations for pneumatically transporting items at high speeds around plants and offices in 4" tube carriers. For instance, bottles containing chemicals, test samples and medicines are characteristic of fragile loads frequently handled by the system. Many factories are now using the method for transporting small tools between tool rooms and strategic production points. (It is even possible to distribute soft drinks to remote departments without harm to the carrier or system.) Paper work, such as IBM and McBee cards, call slips and correspondence, are probably the greatest single industrial use of the equipment to save time and extra steps.



Your own test proves

AMPCO*
ALUMINUM BRONZES

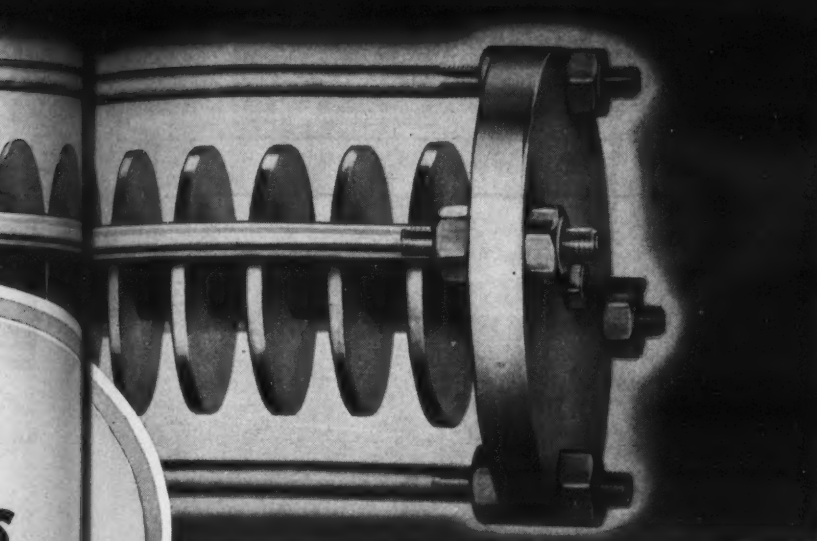
Typical Applications in which Ampco Alloys have been used with Cost-Saving Success!

Absorption columns	Condenser tubes	Fittings — forged, cast	Perforated plate	Studs
Acetylators	Condenser tube sheets	Forgings	Pickling baskets	Sucker rod
Acid chains	Control valves	Fractionating columns	Pipe and fittings	Tanks
Agitators	Conveyors	Hangers	Plug cocks	Tools, safety
Autoclaves	Coolers	Heat exchangers	Pressure vessels	Towers
Baskets	Crystallizers	Heater coils	Pumps	Trays, fractionating
Bearings	Duplexometers	Hooks	Reboilers	Tubes and tubing
Beater bars	Digesters	Injectors	Retorts	Valves
Bellows	Electrodes	Instrument cases and elements	Rivets	Valves
Bolts and nuts	Evaporators	Kettles	Safety tools	Welding rod
Braking rod	Evaporator tubes	Line hardware	Screws	Well tubing
Brine coils	Extractors	Meter cases	Screws, conveyor	Wire
Bubble caps and trays	Fabricated assemblies	Mixer	Springs	Woven wire cloth
Calandrias	Filters and filter screens	Pans, evaporator	Still	
Condenser shells	Filter presses			

Chemical Agents and the Applicability of AMPCO Alloys

Acetate Solvents (Pure)	Carbon Dioxide	Hydrogen Sulfide	Potash Crudes	Toluene or Toluol
Crude	Dry	Wet	Propane	Tri Chlorobenzene
Acetic Acid	Wet	Dry	Shellac	Tri Sodium Phosphate
Crude	Carbon Disulfide	Lacquers and Lacquer	Soaps	Turpentine
Vapors	Carbon Tetrachloride	Solvents	Soda Ash	Varnish
Acetic Anhydride	Caustic Soda	Lactic Acid	(Sodium Carbonate)	Vegetable Oils
Acetone	Chlorine	Magnesium Chloride	Sodium Bicarbonate	Water
Acetylene	Dry	Magnesium Hydroxide	Sodium Bisulfate	Fresh
Alcohols	Wet	Magnesium Sulfate	Sodium Carbonate	Salt (includes
Aluminum Fluoride	Chloroform	Malt Beverages	Sodium Chloride	Polluted Harbor)
Aluminum Sulfate	Chromic Acid	Mercuric Chloride	Sodium Cyanide	Xylene
Aluminum Hydroxide	Citric Acid	Mine Water (Sulfate)	Sodium Hydroxide	Zinc Chloride
Ammonia Gas	Copper Sulfate	Molasses	Sodium Nitrate	Zinc Sulfate
Dry	Crude Oils — Sour	Monochlorobenzene	Sodium Perborate	
Wet	Esters	Muriatic — Cold, Commercial	Sodium Peroxide	
Ammonium Chloride	Ethers	Naphtha	Sodium Phosphate	
Ammonium Hydroxide	Ethylene Glycol	Natural Gas	Alkaline	
Ammonium Nitrate	Ethyl Sulfate	Nickel Chloride	Neutral	
Ammonium Phosphate	Ferric Chloride	Nickel Sulfate	Sodium Silicate	
Ammonium Sulfate	Ferric Sulfate	Nitric Acid	Sodium Sulfate	
Amyl Chloride	Formaldehyde	Nitrogen (Dry)	(Soda Cake)	
Asphalt	Formic Acid	Oleic Acid	Sodium Sulfide	
Barium Chloride	Freon	Oxygen	Sulfur	
Beer	Furfural	Paint Vehicles	Sulfur Chloride	
Beet Sugar Liquors	Gelatin	(Except Soya-Oil)	Sulfur Dioxide	
Benzene or Benzol	Glucose	Palmitic Acid	Dry	
Borax	Glycerine	Petroleum Oils	Wet	
Boric Acid	Hydrocarbon Gases	Sour	Sulfuric Acid	
Brine	Hydrochloric Acid	Refined	5%	
Butane, Butylene	to 5%	Phenol	10%	
Butadiene	to 10%	Phosphoric Acid	25%	
Butyric Acid	(see Muriatic)	Pickling Acid	Up to Boiling	
Calcium Bisulfite	Hydrocyanic Acid	(except Nitric Chromic)	50%	
Calcium Hydroxide	Hydrofluoric Acid	Potassium Chloride	Sulfuric Acid Sludge	
Calcium Hypochlorite	Hydrogen Fluoride (Dry)	Potassium Cyanide	Sulfurous Acid	
Cane Sugar Liquors	Hydrogen	Potassium Hydroxide	Tannic Acid	
Carbolic Acid	Hydrogen Peroxide	Potassium Sulfate	Tartaric Acid	

In using this data, it should be understood that these are results of specific tests and are indicative of those conditions under which the tests were run, and are a basis for recommendation, but not for guarantee.



Fabricating Ampco Metal with Inert Gas
Shielded Metal Arc Welding.

are a Practical Remedy for Your Corrosion Ailments

The success of Ampco aluminum bronzes in solving many different corrosion problems for a wide variety of applications is quickly evident from a glance at the tables on the opposite page.

But you may have a special problem of your own. You may want to make your own tests — prove to yourself that Ampco aluminum bronzes offer a money-saving solution.

Here's all you have to do: We have a complete stock of test specimens of different materials which can be mounted on racks. Several forms of racks are available for tests in atmospheric locations, pipe lines, tanks or other pressure vessels. Just write and ask for test specimens, but be sure to outline the conditions under which the test is to be conducted so that we can supply the most suitable form.

Here's another service that can help you. Sometimes repeated 60- to 90-day exposures are required. Our own technicians will work with you through the testing period, pilot plant and preplant operations. Write today.

*Tear out this coupon
and mail today!*

*Reg. U. S. Pat. Off.

Ampco Metal, Inc.

Milwaukee 46, Wisconsin
West Coast Plant,
Burbank, California



AMPCO METAL, INC., Dept. CP-10, Milwaukee 46, Wisconsin

Send me information on the application of Ampco Aluminum Bronzes for corrosion-resistant service in the Process Industries.

Name.....Title.....

Company.....

Company Address.....

City.....(.....) State.....

IDEAS

One of the most unusual uses of modern pneumatic tube conveying is that of transporting hot, cast metal from the alloying department of one manufacturer to the laboratory for analysis.

Where pneumatic tube systems are already installed and functioning, usefulness of the system can be easily extended.

(Information supplied by The Lamson Corp., Dept. CP, 303 Lamson St., Syracuse 1, N. Y. ... or for more information reader may simply check CP 3998 on handy Reader Service slip between pages 2 and 3.)

Oil Decolorization

(Continued from page 47)

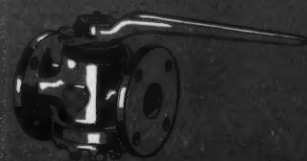
On the basis of experience gained while operating a 500 bbl/day pilot plant, the TCP process has a much lower investment and operating cost than conventional static-bed process. Investment is somewhat more than for a corresponding hot-contacting installation, but the much lower operating costs of the TCP makes up the difference in a very short time (less than a year in some cases).

It is estimated that a TCP unit installed as a replacement for a hot-contacting plant can, under some conditions, be paid out in less than four years because of the reduced operating costs and increased lube oil recovery. Similarly, conversion of even a modern static-bed percolation unit to continuous percolation will pay out in less than four years. Shorter payouts are indicated for conversion of older, less efficient static-bed operations.

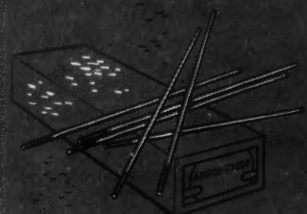
At present, a 2100 bbl/day TCP unit is being built at Coryton, England, and a 3000 bbl/day plant has been licensed for erection in Holland.

(Process was developed by Socony-Vacuum Oil Company, Inc., Dept. CP, 26 Broadway, New York 4, New York.)

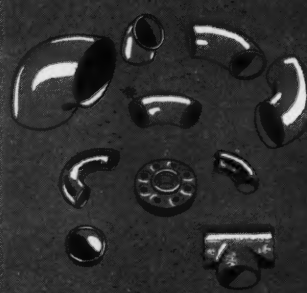
For more information on product at left, specify CP 3999 ... see information request blank between pages 2-3.



Ampco Plug Valves



Ampco Bronze Electrodes



Ampco Pipe Fittings

**Test commercial feasibility
of process for making
anthraquinone**

A process for the manufacture of anthraquinone from naphthoquinone and butadiene is currently under pilot plant development. Anthraquinone, a key intermediate in the synthesis of vat dyes, has been made in this country primarily by the phthalic anhydride-benzene route. European manufacturers have generally preferred the older process of oxidation of anthracene.

Process under study was first advanced by Diels and Alder and consists of addition of butadiene to 1,4-naphthoquinone, then oxidation of the adduct to anthraquinone. Difficulty of producing naphthoquinone at reasonable cost has heretofore made the process uneconomical. Current research has resulted in improvements in process for manufacture of naphthoquinone and its conversion to anthraquinone. Commercial feasibility is now being studied in the pilot plant.

(Information courtesy of Calco Chemical Division of American Cyanamid Company, Dept. CP, Bound Brook, New Jersey.)

**Its chemical properties, form
qualify sulfamic acid
for variety of uses . . .**

almost as strong as sulfuric, sulfamic acid is less corrosive to metals than other strong acids

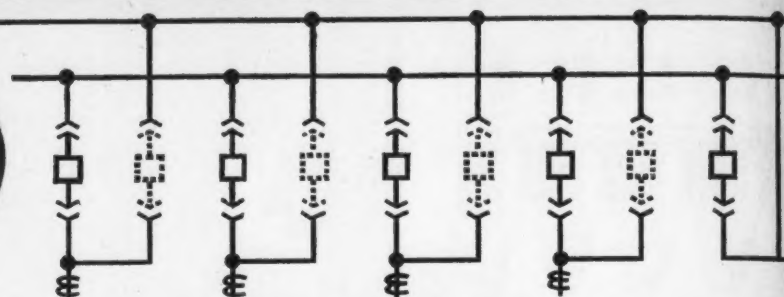
Sulfamic acid — a non-volatile, non-hygroscopic, white crystalline solid acid — combines the properties of a relatively strong acid with convenience and ease of handling; in addition material undergoes various reactions to form useful derivatives. Compound approaches strength of nitric and hydrochloric acids and is stronger than other solid acids such as citric, tartaric and oxalic. While sulfamic acid is only moderately soluble in water, all known salts, except the basic mercury salt, are highly soluble.

General properties: Sulfamic acid or its salts will react instantly with nitrous acid or nitrites — a property which makes these materials useful in obtaining clean-cut diazotizations. Compound may be used as a sulfating or sulfonating reagent for certain primary alcohols, phenols, or unsaturated compounds. In addition to reacting with amines, amides and aldehydes, acid will catalyze alkylation, polymerization and addition reactions.

Acid cleaning: High solubility of its salts, together with property of being less corrosive to metals than other strong acids, makes sulfamic acid useful for safe and clean removal of calcarious and other deposits. It has been incorporated in domestic and industrial metal cleaners and polishing compositions as the acid ingredient.

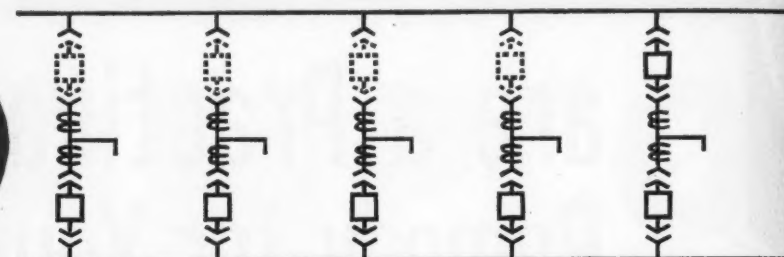
Nitrite removal: Rapid and quantitative reaction of material with nitrous acid makes sulfamic acid useful in eliminating the excess nitrite employed

1



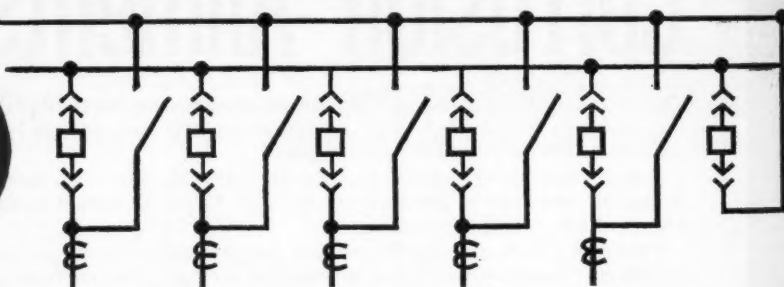
DOUBLE BUS in line

2



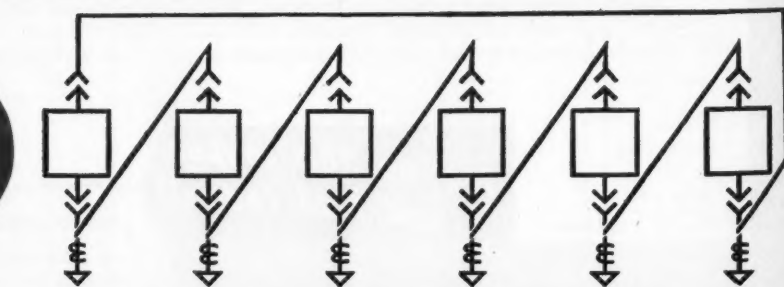
DOUBLE BUS back-to-back

3



TRANSFER BUS and disconnect

4



RING BUS



Switchgear

4

WAYS to Guard Against Power Interruption

Here are a few of the many different circuit arrangements Allis-Chalmers can provide. All are designed to assure continuity of service. Each one is specially suited for specific situations.

With Allis-Chalmers switchgear, all these circuit schemes have one advantage in common. Each arrangement shown can be built into standard units of Allis-Chalmers metal-clad switchgear without adding extra cubicles. This economy and simplicity, plus the obvious space savings, make Allis-Chalmers equipment especially attractive.

Which Arrangement is Best? A study of your problem is needed to answer this question. Any one of these arrangements may be best for your plant. Or maybe an entirely different scheme is needed. In any case, Allis-Chalmers engineers can help you work out the best scheme for you . . . one that provides ✓economy, ✓simplicity, ✓space saving, and ✓uninterrupted service.

For complete information, call your nearby A-C district office, or write Allis-Chalmers, Milwaukee 1, Wisconsin.

A-4135

ALLIS-CHALMERS



When inquiring check CP 4000 on handy form, pgs. 2-3

in diazotization reactions for dye and colored pigment manufacture, for piece dyeing of fabrics and for certain types of leather dyeing.

As an example, a pigment manufacturing process which previously required 25 lb of urea and a 3-hr period to complete excess nitrite removal, it is reported that 4 lb of sulfamic acid now completes same reaction in about 5 min.

A water rinsing procedure is normally used in various piece dyeing procedures to remove excess nitrite; sulfamic acid is claimed to eliminate all but one of the rinsings normally required.

Electroplating, electrorefining and anodizing metals: Nickel, copper, silver, cadmium, zinc, lead, cobalt, iron, indium and other metals can be satisfactorily plated in smooth deposits from sulfamic acid solutions. In certain electrolytic refining operations, use of metal sulfonates is claimed to permit use of less pure electrodes as well as to result in purer cathodic deposits. Electrolyte losses in anode slimes are reportedly reduced.

Sulfation: Sulfamic acid has been found to sulfate cellulose when used with urea as a cellulose swelling agent. Procedure is reported to permit sulfation without degradation of the cellulose.

Fire retardants: Sulfamates are highly compatible with cellulose and extensively used as fire retarding agents. Ammonium sulfamate does not cause stiffening or otherwise affect the hand and feel of paper and fabrics. These compounds show no tendency to crystallize on the surface of the flame-proofed article on aging.

Softening agents: In addition to acting as fire retardants, certain amine salts of the acid have been found to act as softeners for paper and textiles. Mono-, di- and triethanolamine sulfamates and mono- and di-isopropanolamine sulfamates are most stable, give best softening action.

(Application information on sulfamic acid received through courtesy of Grasselli Chemicals Dept., E. I. du Pont de Nemours & Co., Inc., Dept. CP, Wilmington 98, Del.)

Info on thermodynamic properties of combustion gases

This fourth in a series of reports on the thermodynamic properties of combustion gases was prepared to facilitate theoretical study of flame and combustion phenomena. It consists essentially of six tables giving the thermodynamic properties of combustion products of methane-air, propane-air, and ethylene-air mixtures of a range of pressures. It also explains the method of calculation used in preparing the tables.

Dated July 2, 1953, Report of Investigations 4983, "The Thermodynamic Properties of Combustion Gases: Temperatures of Methane-Air, Propane-Air, and Ethylene-Air Flames," P.N. 44067, is issued by Dept. of the Interior, Bureau of Mines, Publications Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa.

BUSINESS AS USUAL

The old sign
comes down and a
new one goes up . . .

but our plant at Ringwood, Illinois
continues to turn out bulk fine
chemicals and photographic
formulations, as it has for the
past 21 years.

RINGWOOD

CHEMICAL CORPORATION

In the last two years, we have
added to our plant new process
buildings, new tank storage facilities
and production equipment, a
complete revised chemical filling
and packaging line, and new land
for further expansion.

Edwal has always enjoyed a
reputation for doing difficult jobs
well. Ringwood will maintain that
reputation. Write, wire or phone
today for information on where our
products fit into your operations.



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When inquiring check CP 4001 on handy form, pgs. 2-3

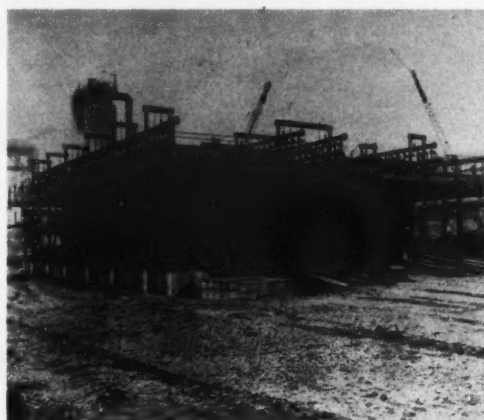
IDEAS

**High thermal efficiency specified
in coke oven cooling sections
used at Fairless Works . . .**

units also resist corrosion, permit flexibility
in operation and maintenance

One of the features of the recently-opened Fairless Works of United States Steel Corp. at Morrisville, Pa. is the by-product coke oven plant which has cooling sections designed for high thermal efficiency. Internal fins in sections maintain turbulent flow characteristics, provide a large surface area for dissipation of heat to outside surface.

Close-grained gray cast iron construction of sections will resist corrosion and provide many years of operation without replacements, according to



Coke oven gas cooler in operation

their manufacturer. Banks of sections are individually valved to allow utmost flexibility of operation and maintenance.

Primary cooling of the coke oven gas is accomplished by recirculation of ammonia liquor, which is cooled in turn by river water. Circulating liquor in each of the two coke oven batteries must be cooled from 155 to 93°F at the rate of 1400 gpm. To do this, as much as 2500 gpm of river water can be delivered to the cooling coils when summer temperature of water reaches 78°F.

Cooling sections in each battery are arranged in 28 parallel banks consisting of three stacks in series, each 28 sections high. Each of these 2352 Type A cooling sections has an external surface of 12 sq ft and an internal surface of 13 sq ft. Wall thickness is 3/8" minimum. Spray nozzles, 3 per stack, distribute cooling water over sections.

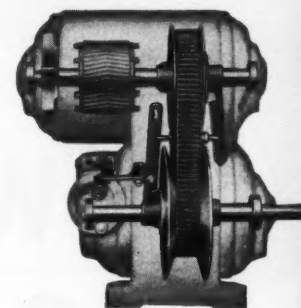
Total duty of each battery is 43,400,000 Btu/hr. Corrected log mean temperature difference is 20.9°F and the overall transfer rate, calculated for a liberal fouling allowance, is approx 75 Btu/sq ft/°F/hr. Pressure loss through each unit is slightly over 20 lb per sq in. A concrete catch basin accommodating both batteries is approx 50' square.

The light oil plant in operation at the Fairless Works has cooling sections designed in a similar

Proportioning With Speed-Trol Boosts Output 25%

Simpler, more accurate regulation of acid-seed proportion in delinting cotton seed accomplished with Speed-Trol variable speed drive increased production 25%, improved quality and reduced costs, reports Joseph J. Day, California Acid Delinting Co., Visalia, California. With our processed cotton seed, growers require 65% less seed per acre and also eliminate chopping.

STERLING SPEED-TROL



OUTSTANDING FEATURES:

Infinite speeds—positive speed regulation—fingertip control—large indicator—positive pulleys—no springs—belt tension in proportion to load—protected—streamlined—Herringbone Rotor—through ventilation—versatile mounting—NEMA dimensions—shock absorbing—quiet operation—rugged—compact—dependable—long life.

20-page illustrated catalog . . .
Sterling Speed-Trol, Slo-Speed, Kloss and Kloss-Tite Electric Power Drives. Write for catalog No. I-B-414

STERLING

ELECTRIC MOTORS

Plants: New York City 51; Chicago, Illinois;
Los Angeles 22; Hamilton, Canada; Santiago, Chile
Offices and distributors in all principal cities

When inquiring check CP 4002
on handy form, pgs. 2-3

CHEMICAL PROCESSING

ng
Trol
25%

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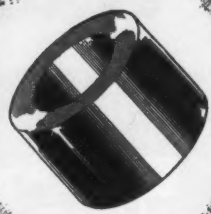
NG
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antiago, Chile
pal cities

P 4002
2-3

ESSING

WORKS WHERE OTHERS WON'T



for
**SUBMERGED
OILLESS
BEARINGS**



WITH CONFIDENCE

- OPERATE DRY or SUBMERGED IN DYES, PLATING, CLEANING & CHEMICAL SOLUTIONS, GASOLINE, FOODSTUFFS
- TRULY OILLESS AND SELF-LUBRICATING
- EXTREMELY DURABLE
- CONSTANT COEFFICIENT OF FRICTION
- APPLICABLE OVER A WIDE TEMPERATURE RANGE—even where oil solidifies or carbonizes
- EXTENSIVELY USED IN CONVEYORS, PUMPS & OVENS
- ROTATING SEALS OF GRAPHALLOY ARE UNEXCELLED

GRAPHITE METALLIZING CORPORATION

1004 HEPPERHAN AVENUE • YONKERS, NEW YORK

Please send data on Graphalloy SUBMERGED OILLESS BEARINGS.

NAME & TITLE _____
COMPANY _____
STREET _____
CITY _____ ZONE _____ STATE _____

When inquiring check CP 4003 on handy form, pgs. 2-3

OCTOBER, 1953

IDEAS

manner, with the same advantages that have been noted for the coke oven gas coolers.

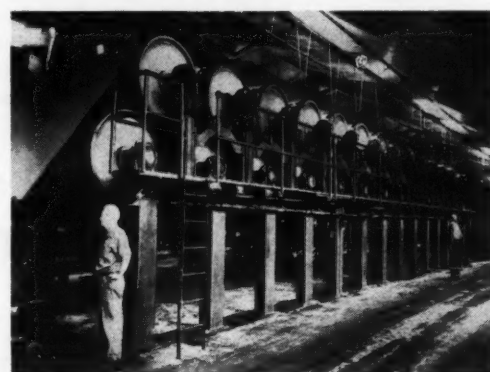
(Wilputte Coke Oven Division of Allied Chemical & Dye Corp. designed and installed the heat transfer equipment described, based on cooling sections manufactured by The National Radiator Co., Dept. CP, Johnstown, Pa.)

Drying of paper web is speeded by jacketed-steel dryer rolls handling 1000 fpm . . .

welded, all-steel construction heats faster, cools faster and takes more pressure

More than eleven miles of nine-point paper, nearly 13 ft wide, is dried in an hour by a battery of 82 jacketed-steel dryer rolls at Gibraltar Corrugated Paper Co., North Bergen, N. J. Welded, all-steel construction of these rolls makes for faster heating when going into production and faster cooling when shutting down.

Dryer rolls such as these are said to have increased production up to 67% in other installations. Instead of a single steam-filled shell, as in conventional models, jacketed-steel rolls have a double shell, one inside the other, with a narrow annular space between in which steam circulates. Result is reported as better, faster drying with positive temperature



This all-welded steel dryer section at Gibraltar handles over 11 mph of paper web. Rolls withstand high temps, pressures without distortion

control every step of the way. Walls can be thinner than those of cast iron rolls, allowing better heat flow for faster heating and cooling. A rotating syphon removes steam and condensate dependably from inner part of roll.

These advantages are said to save many hours of maintenance and downtime. Construction also makes it possible to operate rolls safely up to 350 psi without distortion that could be damaging to the web.

(Jacketed-steel dryer rolls used at Gibraltar are a product of Lukens Steel Co., Lukenweld Div., Dept. CP, Coatesville, Pa. . . or for more information check CP 4004 on handy form, pages 2 and 3.)

DUST CONTROL METHODS

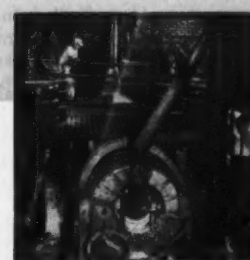
at Sherwin-Williams
Installation features

7 DUSTUBE® collectors

The high efficiency and low operation cost of Dustube Collectors led Sherwin-Williams to select these units. Seven Dustube Collectors are used in the Chicago plant for ventilating the paint, dry color and chemicals departments. Operations ventilated include the charging and discharging of blenders, charging and discharging of pigment milling machines, the use of crushers, grinders and a beta-naphthol chip cooler.



Out of every 25,000 pounds of beta-naphthol produced in the Sherwin-Williams chemical department, 500 pounds is salvaged in one of the Dustube Collectors. This Dustube ventilates equipment used for cooling beta-naphthol chips and illustrates the versatility of the Dustube for use with new production processes.



Many tangible benefits resulted from the Dustube Collector dust control system installed at the Chicago plant of the Sherwin-Williams Co. The benefits include increased dust collection efficiency, improved working conditions and recovery of valuable material formerly lost to the atmosphere. The Dustube cloth tube type collectors ventilate such operations as the bagging of dry color leaded pigment (shown above) with virtually 100% efficiency.



One of the most important operations ventilated is this battery of paste blenders. The Dustube Collectors remove the fine dust emitted during loading before it permeates the atmosphere to become an explosive hazard.

A general review of Dustube advantages are found in Catalog 372. Send for a copy today.



American **dustube®**
WHEELABRATOR & EQUIPMENT CORP.
COLLECTORS

478 S. BYRKIT ST., MISHAWAKA 13, IND.

When inquiring check CP 4005 on handy form, pgs. 2-3

IDEAS

Aircraft engine castings made oil-tight with synthetic resin

Fully automatic process for sealing porous aircraft engine castings has recently been announced as being in operation. Operation is said to make aluminum and magnesium casting oil-tight through vacuum-pressure impregnation of a liquid synthetic resin.

After being cleaned, castings up to 80" in diameter are placed in 1500 gal autoclaves under a .28" vacuum to eliminate air pockets. Solventless resin is then introduced and light pressure applied for about 20 min. After pressure is released, castings are drained, easily washed and baked for 4 hours to cure resin to a hard infusible solid which fills every pore of metal.

Deep penetration of pores enables subsequent machining with no effect on seal. Castings are said to withstand gas and liquid pressures at sustained engine temps of 150°C.

Resin is easily and safely handled. It has a low vapor pressure and a high flash point. Its 100% solids content and low viscosity readily allows complete filling of pores. Material also withstands attack of chemicals, oils and gasoline after curing and is appreciably soluble only in hot strong caustic or alkaline solutions.

(Information courtesy of manufacturer of 3255 Permafil resin, Chemical Div., General Electric Co., Dept. CP, 1 Plastics Ave., Pittsfield, Mass.)

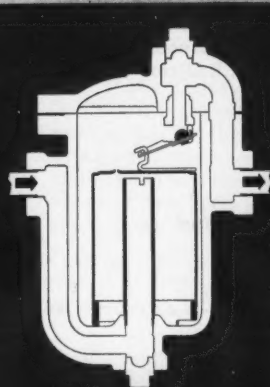
Case reference book of weights and measures

Circular fills a need for concise legal information in lay terms regarding court decisions involving weights and measures cases (through July 1952 court decisions). It makes available to interested persons an indexed reference to reported decisions of Federal and State courts. It permits quick location of any particular decision or decisions concerning a given phase of weights and measures law. Each case is cited precisely and is presented in simplified form.

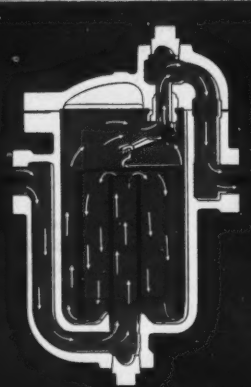
ARMSTRONG TRAPS are



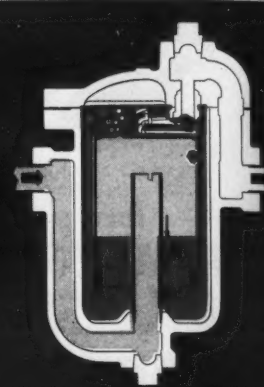
A WORKING PICTURE OF ARMSTRONG DESIGN



1. When trap is first installed, the inverted bucket is down and the valve is wide open.



2. When steam is turned on, condensate (solid color) flows into trap and out through discharge orifice, until . . .



3. steam (light color) reaching the trap floats the inverted bucket and closes the valve.

THE highly efficient design of modern Armstrong traps directly reflects over 40 years' experience in inverted bucket trap manufacture and application gained since Armstrong developed the first practical inverted bucket trap in 1911.

Armstrong design offers:

- A "frictionless" leverage system which combines high leverage with wide opening of a large orifice.
- A minimum of parts.
- Strong, corrosion-resistant and wear-resistant materials.
- Generous margins of safety.

For trap users this means:

- Large capacity.
- Dependable service under adverse operating conditions.
- Low maintenance.
- Continuous operation of heating and process equipment.

The soundness and benefits of Armstrong design have been proved in thousands and thousands of plants all over the world. To insure dependable condensate drainage for a new plant or plant expansion, simply specify: "Traps shall be Armstrong." For additional information, call your local Armstrong Representative or write:

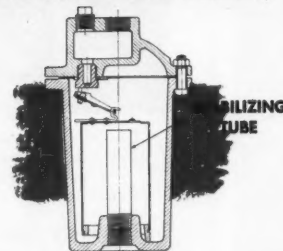
ARMSTRONG MACHINE WORKS
880 Maple St., Three Rivers, Michigan



SELF-SCRUBBING ACTION (see Fig. 2 above). Note that condensate first flows down between bottom of bucket and trap body, then up and out through orifice. The high velocity flow under bottom of bucket keeps dirt in suspension, washes it out when trap opens. No dirt problems with Armstrong design.

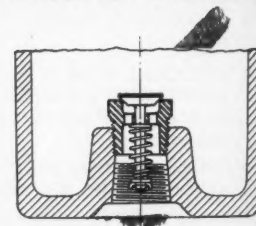
BUCKET FLOATS WHEN LESS THAN 3/4 FULL OF STEAM (see Fig. 3 above). The generous margin of safety (dimension A in Fig. 3 above) insures that the bucket will float with trap body partly full of water. A heavier bucket would give more power but it might not float and close the valve.

SOME OTHER ARMSTRONG



STABILIZING TUBE

Condensate, air and steam are admitted above water level in trap bucket. The water level is undisturbed, eliminating wear-producing agitation of the bucket, valve lever and valve. This exclusive feature greatly lengthens life of working parts.

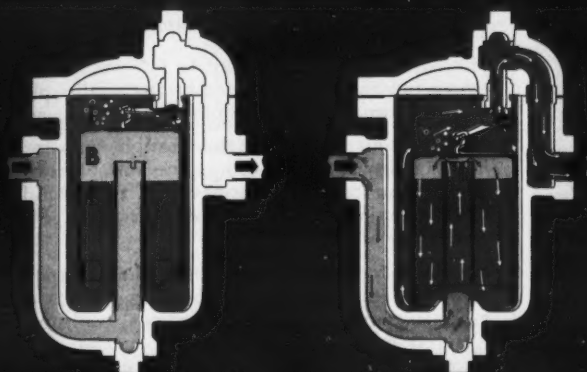


INTERNAL CHECK VALVE

All Armstrong traps can be equipped with the Armstrong spring-loaded stainless steel check valve. Costing less than an external check valve, it also saves installation labor and fittings.

ARMSTRONG

Designed to give better Performance!



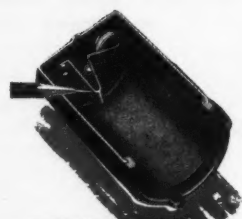
4. When more condensate enters the trap, the bucket loses buoyancy and pulls on valve lever.

5. When weight of bucket times leverage overcomes pressure on valve, bucket sinks and opens trap.

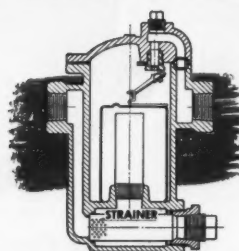
NO AIR BINDING (see Fig. 4 above). Air mixed with steam passes through the bucket vent, collects at top of trap and is discharged ahead of condensate. The large air-handling capacity of Armstrong traps insures top equipment temperatures and faster heat-up.

EXCESS POWER PROVIDED FOR OPENING TRAP (see Fig. 5 above). Weight of bucket times leverage opens trap. Here again Armstrong design provides a generous safety margin. Reducing dimension B in Fig. 4 would increase power of bucket but margin between test opening pressure and operating pressure would be too low to allow for normal wear and for pressure fluctuations.

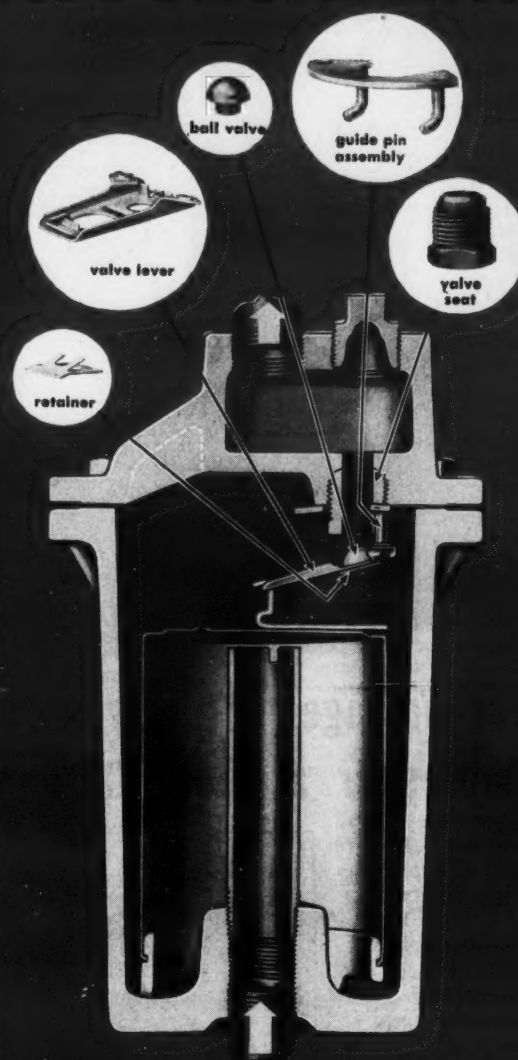
TRAP DESIGN FEATURES



THERMIC VENT BUCKET
Where large amounts of air must be discharged when steam is turned on, and where air can be pushed out ahead of incoming steam, this bucket will speed heat-up greatly. The vent is open when trap is cold, closes at 210° F. Has 50 to 100 times air handling capacity of standard buckets.



INTEGRAL STRAINER TRAPS
The two smallest sizes of Armstrong traps, most apt to need strainer protection, are available in a body style having the strainer built right in. The strainer can be cleaned while trap is operating.



Cross-section: Armstrong inverted bucket bottom inlet-top outlet trap.

SEND FOR NEW 44-PAGE STEAM TRAP BOOK

Complete data on Armstrong trap design and operation; physical data and list prices; capacities; selection, installation and maintenance recommendations. Free on request.



IDEAS

Weights and Measures Case Reference Book, National Bureau of Standards Circular 540, is available by remitting \$1.25 direct to Government Printing Office, Washington 25, D.C.

States atom power plants too costly now

Atomic power plants for producing electric power which the General Electric Co. has investigated would be too costly to justify building now, the firm's top atomic energy executive told the Congressional Joint Committee on Atomic Energy recently. In testimony before the committee, Francis K. McCune said that technical and practical problems barring wide-scale production of atomic electric power would be solved, but that "we are by no means certain this will occur in any short period of time."

He attributed this not to any lack of scientific or operating knowledge, but to the fact that atomic energy replaces only a small portion of a system for generating and distributing electric power, which portion, he said, is itself being reduced.

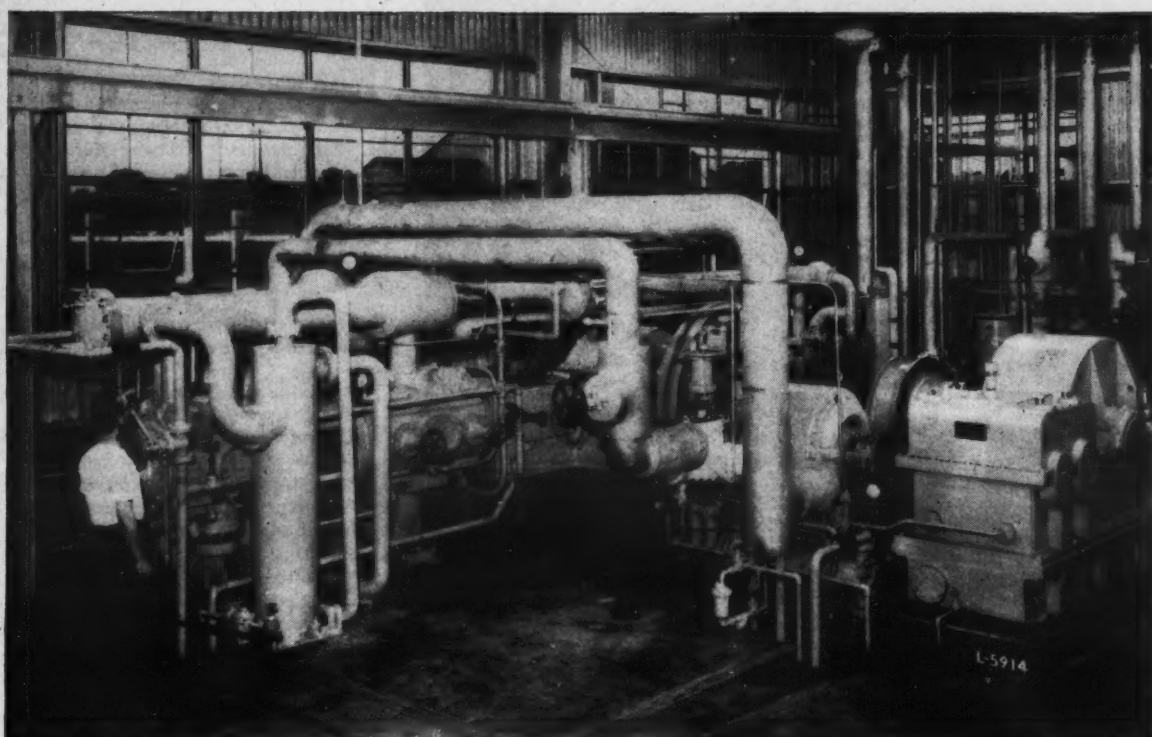
Analyzes dispersion of titanium dioxide

Thorough analysis of dispersion of titanium dioxide using the intensive mixing procedure is presented in 16-page bulletin. Subjects covered include the intensive mixer operation, mechanism of dough-mixer dispersion, dispersing vehicle, selection of pigment type, operation of laboratory intensive mixer and the critical dispersion point. Tables and graphs supplement text.

Bul 906 is issued by Calco Chemical Div., American Cyanamid Co., Dept. CP, Bound Brook, N. J. When inquiring, reader may simply specify CP 4006 on handy Reader Service slip, pages two and three.

For more information on product at left, specify CP 4007 . . . see information request blank between pages 2-3.

STEAM TRAPS



800-HP WORTHINGTON MULTI-STAGE TURBINE drives reciprocating compressor through double reduction gear.

Compact turbine and gear arrangement drives reciprocating compressor at Pure Carbonic

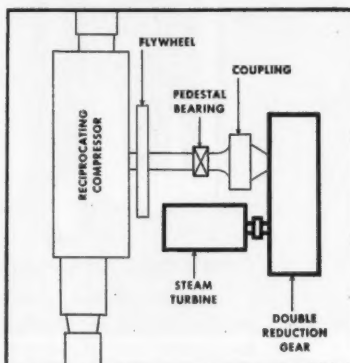
This Worthington installation at the Kansas City, Mo., plant of the Pure Carbonic Company marks a new step in CO₂ plant design practice. A CO₂ reciprocating compressor is driven through a double reduction gear by a multi-stage steam turbine. This unusually compact installation reaches a new high in over-all plant efficiency.

Here are a few of the reasons why the plant engineers, J. F. Pritchard & Company, chose Worthington steam turbine-gear drive over other types of prime movers:

- Clean exhaust steam—ideal for processwork
- Low operating cost
- Turbine speed may be varied to match the load at any time
- High overload capacity

Remember, the engineering of the drive is just as important as the engineering of the compressor. Let Worthington engineers work with you on your compressor-drive problem. Write stating details to Worthington Corporation, Steam Turbine Division, Wellsville, N. Y.

T.2.20



BLOCK DIAGRAM SHOWS COMPACT ARRANGEMENT of Worthington compressor-drive installation at Pure Carbonic's plant in Kansas City, Mo.



A GREAT TEAM IN STEAM



When inquiring check CP 4008 on handy form, pgs. 2-3

IDEAS

Small plants do own microfilming with 16 mm camera . . .

also saves time for field executives by recording data for later checking and study

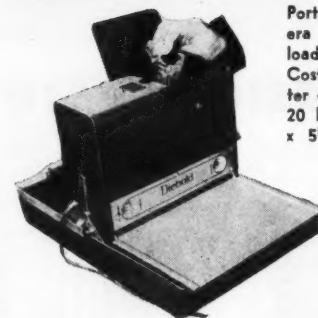
Microfilming of any copy up to 11" width by any length can now be performed by any smaller plant with its own compact, simplified 16 mm camera.

The new unit that makes this possible features 20 lb portability and has a companion portable reader. In addition to small business use it is equally serviceable in department operation in large organizations of various types.

Adaptability to field use makes the camera an answer to the problem of checking records and miscellaneous data without tedious copying or spending hours examining original material. Chain store auditors are a good example of those who



Portable microfilming camera has foolproof film loading cartridge (left). Costs but fraction of master cameras. Weighs only 20 lb. Measures 13 x 11 x 5 1/2". Portable reader also furnished



can speed their work with this portable camera. Records can be filmed, quickly developed and then gone over later at headquarters.

As camera's operation is almost entirely automatic, experience or skill in microfilming is not required. All loading, threading, and film handling is eliminated through a special magazine loading feature.

Film cartridge holds 50 ft — enough to record 1600 letter size documents. As copy is fed to camera it emerges into collector tray at rear. Copy is handled at rate of 90 fpm. Exposed film can be developed at any of the numerous centrally

located processing service centers maintained by the company.

(Portable microfilm camera and companion viewer are products of Diebold, Inc., Dept. CP, Canton 2, Ohio . . . or check CP 4009, pgs. 2 & 3.)

Underground corrosion resistance of galvanized steel confirmed in 13 year study . . .

zinc coated specimens continue to stand up even after coating has worn away

High resistance of hot-dipped galvanized steel pipe to underground corrosion is confirmed in a study recently completed by the National Bureau of Standards. Results confirm previous work showing that galvanized steel having three ounces of steel per square foot of exposed surface is highly resistant to corrosion in many soils which are very corrosive to bare steel. In addition, other informative data have been obtained from the study.

In the tests, short lengths of both galvanized and uncoated steel pipe were buried at 15 test sites for periods up to 13 years. Located in widely separated parts of the United States, test-sites represented a wide range of soil properties. After each of five periods of exposure, specimens were returned to laboratory for examination. Determinations were made of loss in weight, depth of deepest pits, and percentage of area retaining coating.

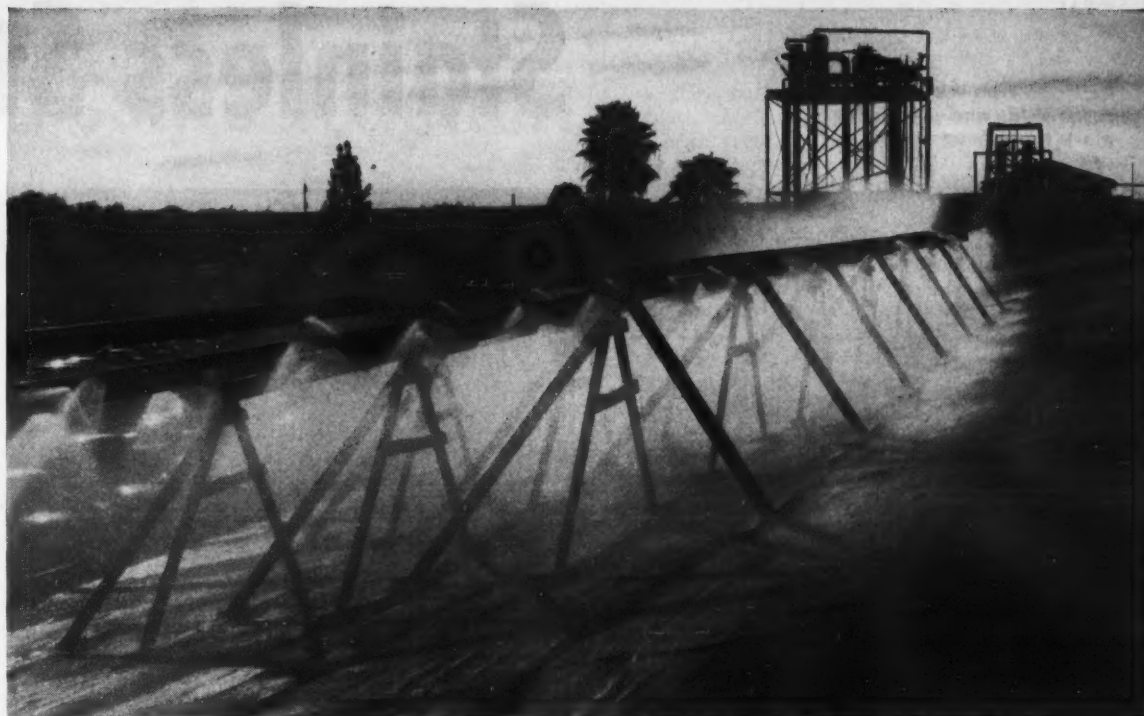
Zinc coatings provided good protection in most of the soils. In one soil in which bare steel pipe was perforated by corrosion after exposure for only a few years, coating on galvanized specimens remained perfectly continuous throughout entire 13-year period. In only two of the 15 soils, both organic, was the zinc coating of negligible protective value.

One interesting finding was the high corrosion resistance that galvanized specimens continued to show in most soils even after outer zinc coating, and even after zinc-iron alloy layer, had entirely corroded away. This continuing protection is attributed to an inorganic coating, probably silicious, believed to have been deposited by galvanic action.

Minimum weight of zinc coating required to protect steel for 10 years was shown to depend on nature of soil. Two ounces per square foot gave sufficient protection in inorganic oxidizing soils. Inorganic moderately reducing soils required a three ounce coating. Highly reducing soils were found to require a heavier coating.

In order to obtain maximum life from galvanized piping, it is necessary to construct entire system of galvanized pipe or else to electrically insulate galvanized sections from pipe of other metals. Otherwise, zinc coating will be removed by galvanic action.

(Courtesy of National Bureau of Standards. Further details are given in "Corrosion of Galvanized Steel in Soils," J. Research NBS 49, 299 (Nov. 1952). NBS Research Paper 2366 may be obtained for 10c from Supt. of Documents, Government Printing Office, Washington 25, D. C.)



PROCESS WATER IS AIRATED AND COOLED on the roof of the Lakeland Highlands Canning Company plant in Highlands City, Fla. A Worthington vertical turbine pump, operating since 1940, supplies cooling water used in freezing orange juice concentrates, cooling canned products, and general washing.



"TROUBLE-FREE, DEPENDABLE SERVICE FOR 13 YEARS." That's what Leon Anderson, plant superintendent at Lakeland, says about this sturdy Worthington vertical turbine pump.

Not one cent's worth of maintenance needed in 13 years of pump operation

That's the record of the Worthington vertical turbine pump owned by the Lakeland Highlands Canning Company in Highlands City, Florida.

Since 1940 the pump has been working 24 hours a day, seven days a week during the citrus season, delivering over 800,000 gallons of water daily. And in all that time, not a single maintenance job has been necessary. This kind of reliable performance is particularly important at Lakeland, since all plant operations depend on the water supply and a failure would bring the plant's production to a halt.

Find out for yourself why the powerful Worthington vertical turbine pump is the choice of leading food, chemical and industrial firms. Get in touch with your nearest Worthington district office or write to Worthington Corporation, Vertical Turbine Pump Division, Section D.3.4, Succasunna, New Jersey, or Denver, Colorado. Ask for our new bulletin, W-450-B39.

D.3.4

See us in Booth 848
at the Chemical Show

WORTHINGTON



THE WORLD'S BROADEST LINE ASSURES YOU THE RIGHT PUMP FOR EVERY JOB

CENTRIFUGAL • ROTARY • STEAM • POWER • VERTICAL TURBINE
CONSERVE GROUND WATER...IT IS A VALUABLE RESOURCE

When inquiring check CP 4010 on handy form, pgs. 2-3

Railroad cars with resin finish resist acids and alkalis for more than three years . . .

test cars carry chemicals such as soda ash, yet remain almost corrosion free

Corrosive action of acids, alkalis, and other chemicals on railroad hopper cars and similar equipment is said to be forestalled up to six times as long by a resin finish. Test cars painted with this material carried punishing cargoes such as cement and soda ash for more than three years. They remained almost completely free of corrosion — even where sledge hammers had been used to break the cargo loose.

In addition to resisting effects of acids, soda ash, sulfur, alkalis, phosphate, common salt, and cement, the finish withstands repeated scrubbing and washing with strong cleaning solutions. It is reported to have the weather durability of the best grade synthetic enamels as well as unusual abrasion resistance.

Concentrated acids affect the finish to some extent but not as readily as they do comparatively short-lived conventional finishes. Aromatic hydrocarbons, ketones, esters, and some chlorinated hydrocarbons will soften the finish. However, as long as no abrasion occurs, the film will harden to its original state when allowed to dry.

Finish is recommended for use on covered hopper cars, tank cars, tank container cars, refrigerator cars, and other equipment subjected to similar rigorous service conditions. It is applied with same equipment and technique normally used for a synthetic lacquer or enamel.

(Information on finish based on Vinylite resins furnished through courtesy of Bakelite Div., Union Carbide and Carbon Corp., Dept. CP, 122 E. 42nd St., New York 17, N. Y. This finish, known as Carclad, is produced by the Sherwin-Williams Co., Dept. CP, 101 Prospect Ave., N.W., Cleveland 1, Ohio.)

Cost of cleaning crankshaft castings reduced by lithium atmosphere in furnace . . .

also increases furnace alloy life by fifty per cent

At the Ford Motor Co. of Canada, Ltd. it was management's object to lower the overall production cost of cycle annealing and cleaning cast crankshafts. After trying many different procedures, it was decided to adopt a heating method which would reduce thickness and toughness of scale on surface of castings.

Without changing existing furnace design or construction, two standard lithium vaporizers were attached to each side of the direct fired furnace. These are simple accessories that can be fitted to any furnace. Units are small refractory lined chambers which are gas fired. Running through the middle of chamber is a rectangular refractory tube in which rests a boat of lithium compound.

When chamber is heated, compound is vaporized and

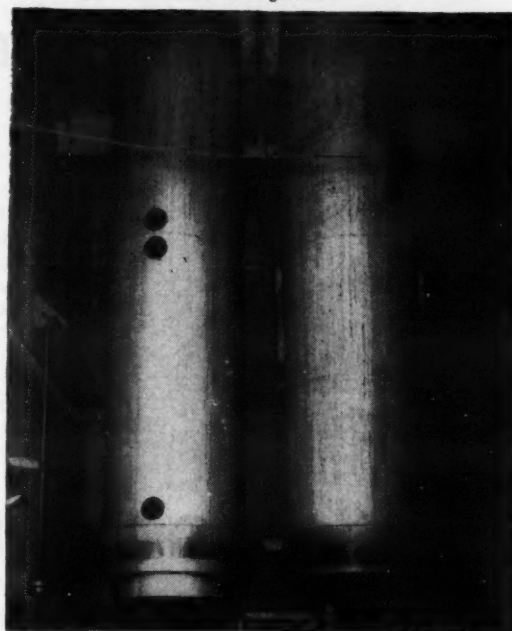
Stainless Steel withstands co



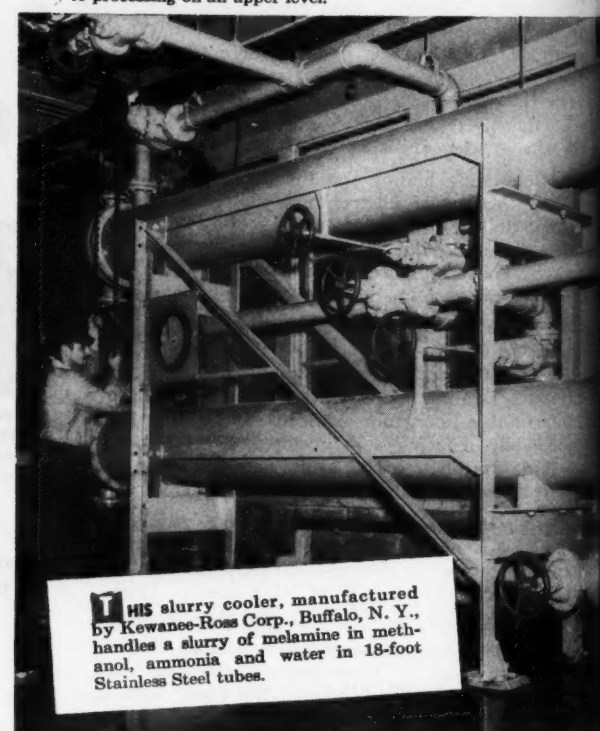
POWDERED dicyandiamide is removed from railroad box cars by means of the Fuller Airveyor. The intake end—made of Stainless Steel flexible tubing—is shown in the foreground.



THE AIRVEYOR with its Stainless Steel flexible tubing is also used to send dicyandiamide from bins on the first floor of the Willow Island, W. Va. plant to processing on an upper level.



ONE OF THREE pairs of Stainless-line autoclaves in which polymerization reaction takes place. The 2000-gallon units are five feet in diameter by 28 feet high and were manufactured by A. O. Smith Corporation, Milwaukee, Wis.



THIS slurry cooler, manufactured by Kewanee-Ross Corp., Buffalo, N. Y., handles a slurry of melamine in methanol, ammonia and water in 18-foot Stainless Steel tubes.

ends corrosive high-pressure reaction

at American Cyanamid's big melamine plant

MANUFACTURE of melamine—a basic ingredient in the melamine-formaldehyde resins that find their way into an amazing variety of end products—poses severe equipment problems due to the corrosive nature of the high-pressure reaction involved. But here, as in so many other chemical processing applications, the strength and corrosion resistance of Stainless Steel provide the

answer to these problems.

At the biggest melamine plant in the United States—the Willow Island, W. Va. operation of American Cyanamid Company's Calco Chemical Division—processing takes place almost without exception in Stainless equipment.

The process for melamine manufacture used here is based on the polymerization of dicyandiamide under the pressure of liquid

ammonia with methanol as a secondary solvent.

Powdered dicyandiamide is carried from box cars to concrete storage bins by means of a conveyor using Stainless Steel pipe and flexible tubing. It is mixed with the liquid components in Stainless Steel dissolvers, and then goes to one of six 2000-gallon Stainless-lined autoclaves where the polymerization reaction takes place. High pressure steam in Stainless Steel coils provides the necessary temperatures, and lines, valves, fittings and pumps on each side of the autoclave stage are Stainless, too.

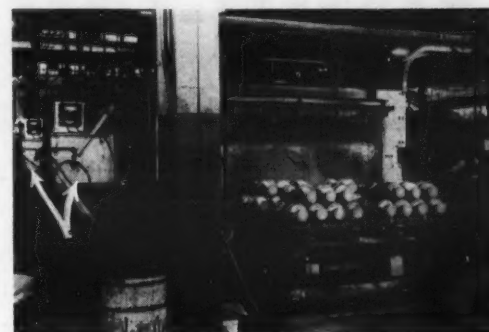
From the polymerization stage, the product passes through Stainless Steel cooling units, quenchers and heat exchangers. After decantation, the residue of 50% melamine and 50% water is further reduced in a battery of four centrifugals, having Stainless Steel baskets and Stainless-clad shells. Final drying takes place in a rotary dryer with Stainless Steel steam tubes and a Stainless-clad shell.

In addition to the high strength and corrosion resistance it provides, Stainless Steel prevents even the slightest metallic contamination of the product which would cause it to fall short of the exacting specifications for resin manufacture.

You'll find these characteristics of Stainless Steel will pay off in your chemical processing operations too. And for finest performance, insist that your fabricator use perfected, service-tested U-S-S Stainless Steel.

FINAL DRYING takes place in this rotary dryer made by General American Transportation Company, Chicago, Ill. Stainless Steel tubes carry steam pressure at 65 pounds psi.

lithium vapor is picked up by products of combustion which enter tube and are carried into furnace. Here lithium vapor, as it mixes with products of combustion resulting from direct gas firing of furnace, provides a high degree of atmosphere control, maintained with a minimum of adjustment. Lithium not only inhibits additional oxide formation on castings but also tends to change the character of the scale



Arrows show standard lithium vaporizers attached to direct fired furnace

which was on the metal when it was put in the furnace, making it relatively soft, thin, and flaky.

Thus, with annealing completed, castings are in much better condition for cleaning. Table blast operation requires only 5 to 8 passes for cleaning same equipment which required as many as 15 passes with other procedures. This means a 50% reduction in cleaning time and cost.

It is also said that lithium atmosphere, permeating furnace chamber to form coating on crankshafts, covers the alloy parts, such as furnace rails, trays, and other fixtures which are in furnace or pass repeatedly through furnace. This coating inhibits normal oxide attack, increasing furnace alloy life at least fifty per cent.

Photograph shows continuous, pusher type furnace, direct gas fired, with lithium atmosphere protection for normalizing crankshaft castings; arrows show lithium vaporizer attached to furnace side wall. Two additional vaporizers are installed on opposite wall.

(Information courtesy of The Lithium Company, Dept. CP, 111 Sylvan Ave., Newark 4, N. J.)

Tells how to prepare materials for hot-dip galvanizing

Illustrated, 4-page folder outlines proper methods of preparation for various metal assemblies prior to hot-dip galvanizing process. Nine different designs and fabrications are discussed.

"Recommendations for the Proper Preparation of Materials Prior to Hot-Dip Galvanizing" is issued by the American Hot-Dip Galvanizers Association, Inc., Dept. CP, 1507F First National Bank Bldg., Pittsburgh 22, Pa. When inquiring specify CP 4012 on handy form, pages 2 and 3.

UNITED STATES STEEL CORPORATION, PITTSBURGH • AMERICAN STEEL & WIRE DIVISION, CLEVELAND • COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. • UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U-S-S STAINLESS STEEL

SHEETS • STRIP • PLATES • BARS • BILLETS • PIPE • TUBES • WIRE • SPECIAL SECTIONS



UNITED STATES STEEL

When inquiring check CP 4011 on handy form, pgs. 2-3

**Tightest gate valve . . .
... you ever used!**

King-clip®

by **LUNKENHEIMER**

It closes tight . . . it stays tight . . . and here are four good reasons why:

The new Non-Slip Handwheel provides a firmer, more comfortable grip for closing—even when the operator's hands are wet or greasy.

The body provides unusual ruggedness—protects the valve against distortion from wrenching or pipe stresses . . . and the steel clip permits quick disassembly and reassembly.

Extra thread length prevents pipe ends from jamming against diaphragm or seat rings to force them out of line. Threads accommodate both A. P. I. and standard threaded pipe.

Stemalloy* stems, in the Iron Body Bronze Mounted patterns, have amazing resistance to thread wear. Millions are in use, and *not one* has ever been returned due to wear failure.



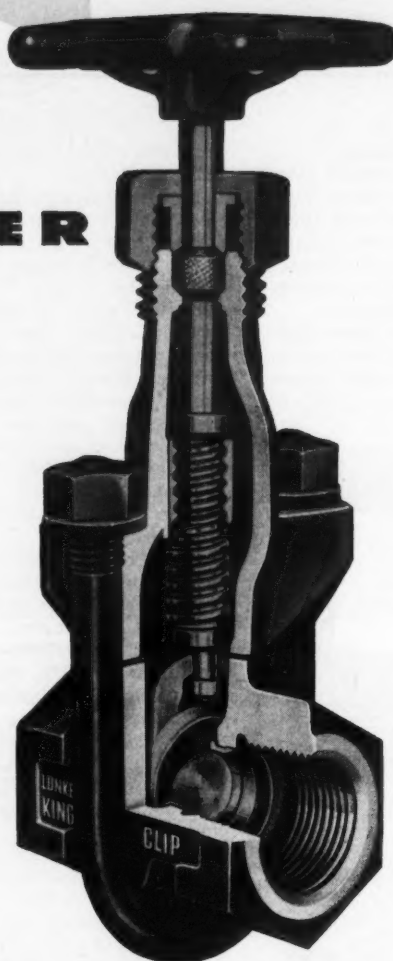
BRONZE • IRON • STEEL

LUNKENHEIMER®

THE ONE *great* NAME IN VALVES

When inquiring check CP 4013 on handy form, pgs. 2-3

*the original clip
valve with the NEW
non-slip®
handwheel**



Ask your Lunkenheimer Distributor about "King-clip" — the original Lunkenheimer clip valve with cast-in drain channels and a bonnet-thread bushing for perfect stem alignment. For full details, request Circular 561 from your distributor or The Lunkenheimer Company, Box 360C, Cincinnati 14, Ohio.

*Patented

IDEAS

Fungicide-Insecticide for treating seeds announced

A chemical weapon to arm certain crop seeds against both disease and insect attack will be available for the 1953 season. The material combines a fungicide to protect the seed and seedling against soil-borne diseases, and an insecticide which is toxic to insects in the soil that feed on the seed and young plant.

DuPont chemists have combined a dustless formulation of Arasan with lindane, trade-naming the product DuPont I & D Seed Protectant. Small quantities of the seed may be treated by hand, or large amounts may be treated by commercial seedsmen with slurry treating equipment.

Material is recommended for use on corn and beans in many areas where both disease and insect onslaught have prevented growers from getting consistently good stands of these crops.

(Information courtesy of E. I. du Pont de Nemours & Company (Inc.), Dept. CP, Wilmington 98, Delaware.)

Gives equivalent plate protection with only 1/3 to 1/2 amount of nickel usually required . . .

process is claimed to plate any article uniformly, regardless of size or shape

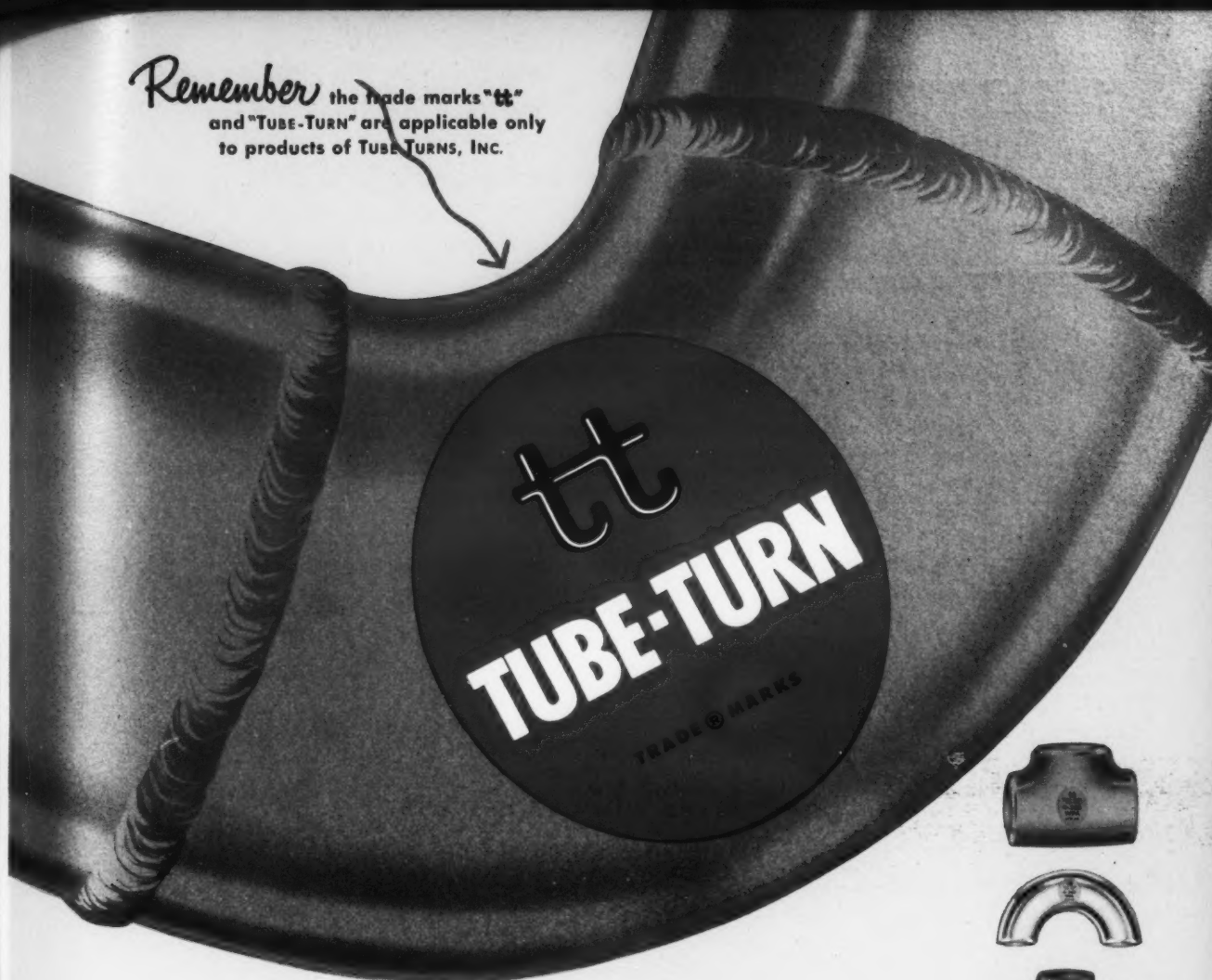
Originally intended to be an alternate method of nickel plating, recently developed process opens up possibilities for plating operations which were impossible or impractical with previously available processes. It is claimed that the process will plate any article uniformly, regardless of size or shape, and has proved satisfactory for production-line plating of steel, copper, brass, bronze, stainless steel and aluminum. Tests on magnesium and plastics indicate that these materials may also be handled by this method.

It is reported that, because of its greater efficiency, this process will provide important savings in critical nickel. These savings result partially from the plating's non-porosity, partially from the elimination of overplating due to uniform plating obtained by process, and finally because it is claimed to require 2 or 3 times more nickel to provide the same corrosion resistance with the electroplating process as is required with the recently developed procedure.

A result of research intended to develop a process for coating the interior of tank cars for carrying corrosive chemicals and materials, plating process — known as Kanigen — depends upon the reduction of nickel by the use of hypophosphites. Kanigen plate is a nickel-nickel phosphide composition; normal platings run about 5 to 8 per cent phosphorus and have a Vickers hardness of 550-650. Thickness of these platings is very uniform — usually within 5 per cent of average thickness. If desired, this thickness can be controlled, at present, to within 1/10,000th of an inch, and with refine-

L-753-4

Remember the trade marks "tt"
and "TUBE-TURN" are applicable only
to products of TUBE TURNS, INC.



Available in all piping materials!

ALLOY OR NON-FERROUS PIPING is often the answer to problems of contamination, corrosive action, severe pressures and temperatures, or cyclic operation. You can obtain TUBE-TURN Welding Fittings and Flanges of stainless steels, nickel and nickel-base alloys, copper and copper-base alloys, aluminum and aluminum-base alloys, and newest of all, titanium. For good service in welding fittings, in carbon steels, or in alloy or non-ferrous metals, call your nearby TUBE TURNS' Distributor. He's ready to serve you from industry's most complete line.

*The Leading Manufacturer of
Welding Fittings and Flanges*

TUBE TURNS, INC. LOUISVILLE 1,
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DISTRICT OFFICES: New York • Philadelphia • Pittsburgh • Chicago • Houston • Tulsa • San Francisco • Los Angeles • Denver • Atlanta • Dallas • Midland, Texas

Subsidiaries: TUBE TURNS OF CANADA LIMITED, CHATHAM, ONTARIO • PENNSYLVANIA FORGE CORPORATION, PHILADELPHIA, PA.



ENGINEERING SERVICE

TUBE TURNS' Engineering Service

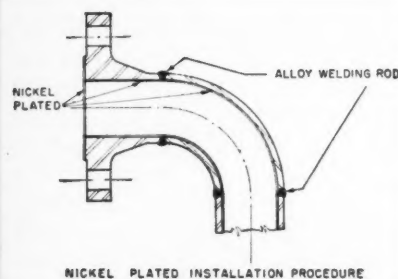
can help you cut cost of corrosion-resistant piping



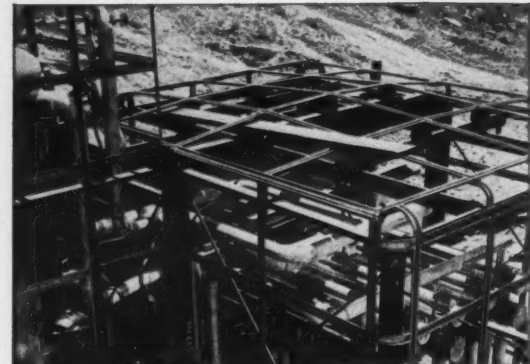
G. A. GAUM is one of TUBE TURNS' Engineering Service Division men spending a great deal of time in the field obtaining performance data that contributes to improved piping technology.

THE COST of corrosion-resistant piping can often be minimized by the use of standard carbon steel piping *plated* on the inner surface with such materials as nickel, copper, etc. In atomic energy plants, nickel-plated piping in sizes through 42" is giving satisfactory service, and has substantially reduced original cost. The method is also applicable to many industrial processes where corrosion resistant materials are specified.

Such plating is generally .008" thick, and can be applied in heavier thicknesses where desirable. You can obtain recommendations on preferred plating sources, proper welding techniques and rods from TUBE TURNS' Engineering Service—always ready to help you with special piping problems.



Installation procedure for nickel plated welding fittings and flanges.



Top of heat exchanger and fractionating tower of oxygen plant at a metal mine. All aluminum piping with TUBE-TURN Welding Fittings operates at temperatures of $+100^{\circ}\text{F.}$ to -320°F.



Dimensional accuracy of TUBE-TURN Welding Fittings speeds fabrication in the shop or in the field. True circularity and uniform wall thickness assure perfect alignment. Each TUBE-TURN welding fitting is individually examined by skilled inspectors for accuracy.

Want Piping Information?

TUBE TURNS, INC. is recognized the world over for its leadership, not only in the field of welding fittings and flanges, but as a source of authentic information on piping design. Check the coupon below for bulletins you would like to receive.



TUBE TURNS, INC., Dept. KK-9
224 East Broadway, Louisville 1, Kentucky

Please send me free copy of:

- | | |
|---|---|
| <input type="checkbox"/> Special Alloys | <input type="checkbox"/> Stainless Steel Welding Fittings and Flanges |
| <input type="checkbox"/> Pipe and Fitting Materials | <input type="checkbox"/> Design Properties of Pipe |

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"tt" and "TUBE-TURN"
Reg. U.S. Pat. Off.

TUBE TURNS, INC.
LOUISVILLE 1, KENTUCKY

ments now under way, it is expected that this control can be further improved.

Large vessels, tanks, chemical process equipment, valves, pipe structures and similar objects can be fabricated of any desired and easily-worked material, assembled, and then given a continuous coating of nickel in whatever thickness desired. Because of its wearing qualities, material will find application in instrument gearing and precision manufacturing. It may also be used to build up and reclaim small parts which have been machined beyond acceptable tolerances. In connection with the handling of corrosive chemicals, process may be used to plate vats, mixing units and all connections, including the interiors of valves and other devices with sufficient coating to protect against any type of corrosion which will not affect nickel.

(Information on chemical process for nickel plating received through the courtesy of General American Transportation Corp., Dept. CP, 135 S. LaSalle St., Chicago 90, Ill. . . . or for more information check CP 4014 on handy form, pgs. 2 & 3.)

Co-current flow of a gas and non-Newtonian fluid investigated in study

In view of the limited amount of data available concerning the co-current flow of a gas and a non-Newtonian material, an investigation was initiated to study this type of flow. Air was used as the gas phase and four concentrations of kaolin clay in water were used as the non-Newtonian materials. Two of these suspensions behaved as pseudo-plastics, while the other two exhibited Bingham plastic properties.

Pressure drop measurements were made in three sizes of pipe for each of these suspensions flowing alone and co-currently with air. Suspension flow rates were varied from 0.15 to 16 lb per sec, while air flow rates were varied from 0.0015 to 0.025 lb per sec. Majority of tests were conducted in the turbulent flow region.

From the data obtained, flow curves of each of the three test sections were determined in both the laminar and turbulent flow regions. In the turbulent flow region, the usual Newtonian friction factor-Reynolds number relationship was found to be valid confirming previous investigations in this field.

The pressure-drop data obtained on the co-current flow of air and these suspensions in the turbulent-turbulent region were correlated within the range of 20% by the method of Lockhart and Martinelli.

(Abstract of a paper entitled "Co-current Turbulent-Turbulent Flow of Air and Water-Clay Suspensions in Horizontal Pipes" as presented before a recent technical meeting of the American Institute of Chemical Engineers.)

For more information on product at left specify CP 4015 . . . see information request blank between pages 2 and 3.

ARE YOU SURE OF THE EFFICIENCY OF YOUR HEAT TRANSFER OIL?

Sun's New Check List Will Help You Analyze It

Your answers to 15 basic questions will give our heat transfer specialists the data they need to study your system and make recommendations. To have a representative go over the check list with you, contact your nearest Sun office or write SUN OIL COMPANY, Philadelphia 3, Pa., Dept. CP-10.

Sun Heat Transfer Oils give you

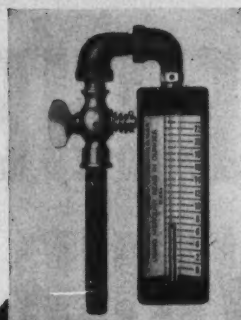
- High thermal conductivity
- High heat-carrying capacity
- Low vapor pressure and high initial boiling point
- Easy circulation with any pump normally used in oil-type heat transfer systems
- High thermal stability

**INDUSTRIAL PRODUCTS DEPARTMENT
SUN OIL COMPANY**

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When inquiring check CP 4016 on handy form, pgs. 2-3



MERIAM

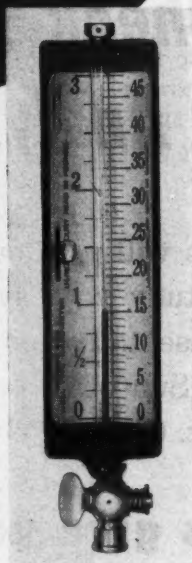
Non Spill

MERCURY PRESSURE GAUGES

★ These accurate, compact, direct reading gauges—either as portable or permanent installations—have a wide application for measuring low range air and gas pressures.

They are designed so that the mercury cannot be lost from the gauge either through spilling or over-pressuring. They are available in the 3" and 6" sizes to measure 22 oz. and 48 oz. respectively. Unit scale graduations are in ounces. Each gauge is furnished complete with pet cock and necessary mercury.

Housings of the gauges are of cast semi-steel, accurately machined to insure leak-proof fitting of all the component parts. The housing, finished in dull black baked enamel, protects on three sides the heavy walled Pyrex, centrally located tube. Write for Bulletin 3 containing full details.



THE MERIAM INSTRUMENT CO.
10940 Madison Avenue • Cleveland 2, Ohio
Western Division: 4760 E. Olympic Blvd., Los Angeles 22, Calif.
In Canada: Peacock Bros., Ltd., Montreal

MERIAM ★
Instruments
ESTABLISHED 1911

MANOMETERS, METERs AND GAUGES FOR THE ACCURATE MEASUREMENT OF PRESSURES, VACUUMS AND FLOWS OF LIQUIDS AND GASES

When inquiring check CP 4017 on handy form, pgs. 2-3

CONTROLLING THE ORTHOFLOW

*instrumentation
& control*

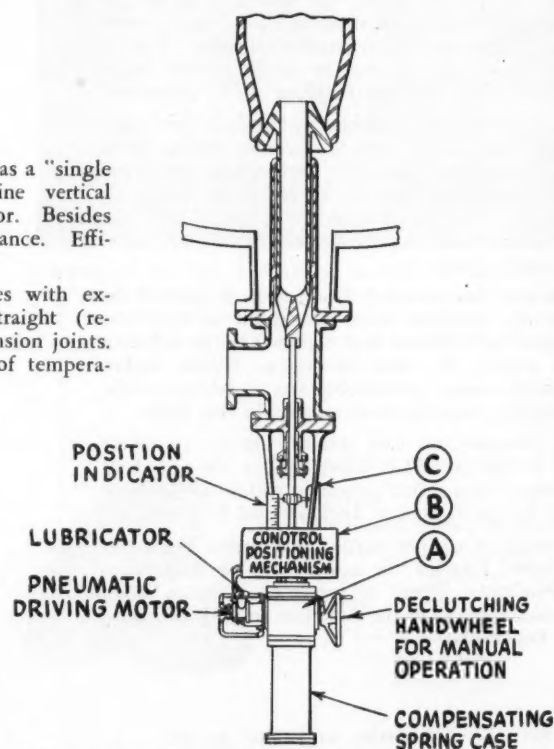


Orthoflow cracking units have definite advantages, but they require exceptional control valves — here's how catalyst feed is controlled

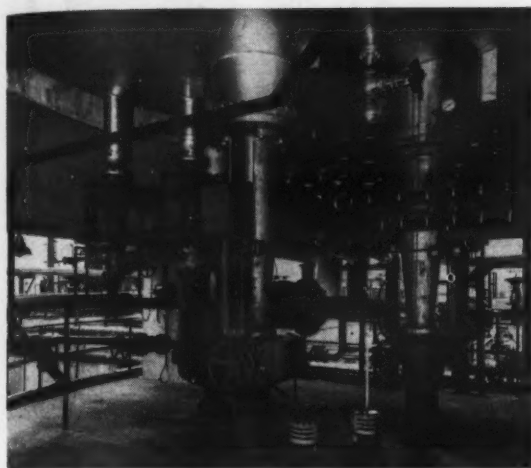
ORTHOFLOW fluid catalyst cracking unit has a "single vessel" design which permits straight line vertical flow of catalyst between reactor and regenerator. Besides reducing structural size, this reduces maintenance. Efficiency and throughput are not sacrificed.

This design, however, calls for control valves with exceptional characteristics. Catalyst lines are straight (reducing erosion at elbows) and require no expansion joints. But there is a differential expansion because of temperature difference in the line and the regenerator portion. Thus control valve at foot of catalyst return line must be able to compensate for 6 inches of expansion.

Single-seated 42-inch diameter plug, large unbalanced weight, heavy stem thrust, high stuffing box friction, and large stem diameter are factors that call for an extraordinarily powerful operator. Thrust requirements run as high as 12,000 pounds. Yet proportional control calls for accuracy of 1/500 of control stroke length. In addition, valve must be able to handle operation from a cold start and must be capable of opening 10 to 15 inches beyond its normal control range for servicing. This means a total travel of about 27 inches.



Principal parts of catalyst control valve



Spent and regenerator catalyst valves under an Orthoflow unit

Valve that satisfies these specifications uses a pneumatic rotary motor which drives the plug through a wormgear arrangement. It, in turn, is controlled by a position detecting mechanism which senses stem position and directs stem motion to balance input signal. Furthermore, in event of air pressure failure, valve retains its last position and can be controlled manually.

These principal parts are shown in cutaway drawing of valve. A is the driving mechanism where pneumatic motor or handwheel revolution is converted to stem travel. B is the position control where valve stem position is compared to input pneumatic signal. Linkage to B can be seen at C — where a steel tape connects stem position indicator to the positioning mechanism.

These valves have been in service now for nearly two years. Performance records are good — particularly from a maintenance viewpoint.

(Rotomotor valves are products of Conoflow Corp., Dept. CP, 2100 Arch St., Philadelphia 3, Pa. . . or for more information check CP 4018 on handy form, pages 2 and 3.)

Thermal conductivity for gas analysis

Complete information on recorders and controllers used for gas analysis by thermal conductivity is contained in 8-page folder. Performance characteristics and design features are given attention. Package units for CO₂, SO₂, O₂ purity, H₂ purity, are included.

Folder ND46-91(2) is issued by Leeds & Northrup Co., Dept. CP, 4934 Stenton Ave., Philadelphia 44, Pa. When inquiring specify CP 4019 on handy form, pages 2 and 3.

Let us take a load off your mind!

DO YOU have a tricky load measurement problem on your mind? Something like measuring the tension on a conveyor belt for example, or the thrust on a bearing, or the weight of solids or corrosive liquids in a tank . . . ? Taylor volumetric load measuring elements have been used for years in paper mills, but there are many applications throughout the industry where these highly accurate and sensitive in-

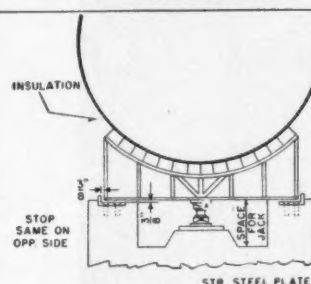
struments are proving invaluable. Most recent developments afford a wide variety of ranges, greater range suppression, greater over-range protection and greater energy for positioning the pen or actuating a control mechanism. Applicable to tension and compression loads. Call your Taylor Field Engineer or write for **BULLETIN 98232**. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada.

PROBLEM

SOLUTION

CHARACTERISTICS

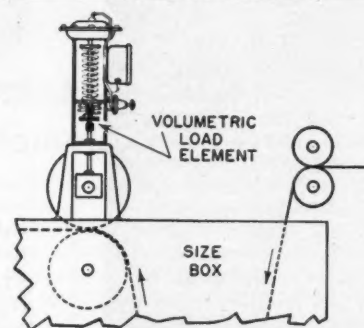
To accurately measure the weight of chlorine in tanks



Spool type Load Measurement Element

Range limits: 0-240,000 lbs. for compression loads, maximum load not to exceed 400,000 lbs. Applicable to horizontal or vertical tanks, containing corrosives or solids, making conventional level measuring devices impractical. Tension loads 0-30,000 lbs.

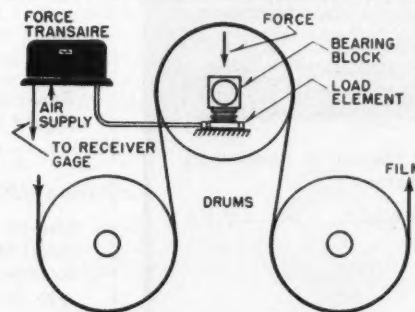
To accurately measure squeeze roll pressures on textile slashers



Diaphragm type Load Measuring Element

Range limits: 0-5,000 lbs., maximum load not to exceed 6250 lbs. Compound ranges, tension—0—compression also available. Applicable to measure roll or nip pressures in calender stacks, press section and many other finishing operations involving processing of material between rolls.

To measure film tension within very close limits as a measure of "gain" or percentage of stretch



Transaire Volumetric Load Measuring Element

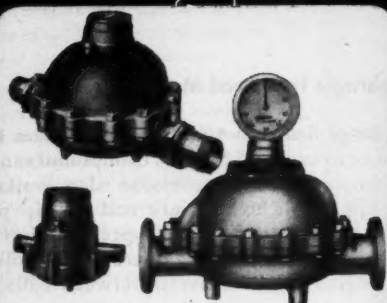
Range limits: 0-300 lbs. in range spans as short as 30 lbs. Used in conjunction with a TANSIAIRE* Pressure Transmitter which sends an output air pressure to an indicating, recording or controlling receiver proportional to the force applied. Applicable to film, paper, yarn or similar tension measuring requirements.

*Reg. U.S. Pat. Off.

TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

When inquiring check CP 4020 on handy form, pgs. 2-3

"I suggest NIAGARA METERS
Their wide range will give us
ACCURATE MEASUREMENT
of all liquids we use!"



BUFFALO METER CO.

2892 MAIN STREET
 BUFFALO, N.Y.

Gentlemen:

Please send me complete information on the use of economical NIAGARA METERS, based on the data below:

Liquid _____ Pressure _____ p.s.i.
 Temp. _____ ° F.
 Flow rate _____ g.p.m.
 Maximum batch _____ gals.
 Name _____ Title _____
 Company _____
 Address _____

The excellent accuracy of NIAGARA METERS minimizes waste and losses in the measurement of chemicals, solvents, oils, hot water, cold water, syrups and other liquids. Nearly all volumes and types are handled, from 1/30 to 1000 gallons per minute. Special electric contact meters for automatic batch metering. Stainless steel meters for corrosive liquids.

Be sure you know all the advantages of NIAGARA METERS.

Send in the Data Request blank below — today.

When inquiring check CP 4021 on handy form, pgs. 2-3

INSTRUMENTATION & CONTROL

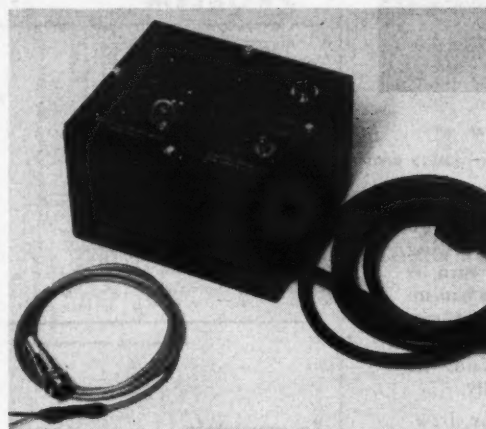
Relay for temp control
needs only 6 volts,
1 microamp . . .

sensitive relay can be used on many precise controls and precision measurements

Uses: Designed especially for use with mercury thermoregulator, but it may be used wherever control must be obtained from small electrical signals.

Features: Control circuit is non-inductive. It does not draw more than 1 microampere when contacts are closed. When contacts are open, voltage across them does not exceed 6 volts.

Description: Power unit shown in illustration has two receptacles. One of these is normally open and one is normally closed. Power circuit



Two outlets: one normally open, one normally closed

controls heater loads as high as 1200 watts. Two pilot lights indicate when unit is on and when heater current is on. Unit is housed in a black steel cabinet. Panel size is 5 x 6 inches.

("Elphco" No. 3 Relay is manufactured by Electrophysics Co., Dept. CP, 287 Broadway, New York 7, N.Y. . . . or for more information check CP 4022 on handy form, pages 2 and 3.)

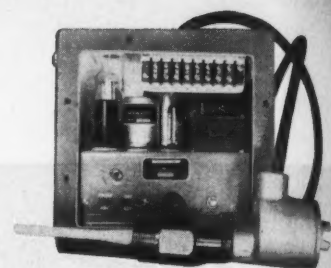
Same unit measures air flow,
liquid level . . .

thermostat measures amount of heat carried away from unit's heater

Uses: Can discern changes in liquid level as small as one-tenth of an inch. It can also be set to respond to changes in air flow in the range from 4 to 180 feet per second of air velocity past it.

Features: Detector is easy to install and, since it has no "moving" parts, is almost foolproof in operation.

Description: Detect-A-Flo was first developed to warn of failure of air supply to aircraft heaters.



ELECTR-O-PROBE

Distinguishes liquid level, foam, or even interface between liquids

Probe of this "On-Off" instrument will operate at temperatures as high as 1500° F

USES: Controller gives an "on-off" signal when level covers the probe. Can be used to detect liquid or foam level and operates well with viscous fluids, acids, bead and powder catalysts or even in locating a liquid-liquid interface.

FEATURES: Sensitivity control may be adjusted so that instrument reacts to or ignores foam.

DESCRIPTION: Liquid level controller reacts to a change in capacity when probe is covered by a liquid or other flowable material. Capacitance change causes a radio-frequency oscillator to reduce or completely stop oscillation when level rises above the probe. Oscillation starts again when level falls below the probe. This change in operation is used to generate a DC voltage signal, which through an amplifier, operates the relay. A plug-in type relay is normally furnished with a DPDT set of contacts—other arrangements may be obtained for special applications.

• Instrument is self-contained except for probe which is attached to it by a low-loss coaxial cable available in any length up to 100 feet. This permits location of the amplifier unit remotely from the vessel.

• The standard model probe is approximately 6" long and may be coated with any protective material, such as nylon or teflon, or may be left bare for applications on non-conductive products. The probe adapter is threaded with 1" national pipe threads and screws into the vessel wall. Probe may be operated at 30" of vacuum or 1,000 pounds pressure. Flanged type probes are available for the higher pressures.

• Temperatures from 65° F to 1500° F do not hinder probe operations, although the amplifier unit proper is designed to operate from 40° F to 200° F. Standard 110 V, AC power is required with the instrument drawing 32 watts. Only three vacuum tubes are used (2050 or 2051, 65Q7, and 6X4).

For detailed information on any problem write to ELECTRONICS DIVISION

INSTRUMENTS, INC.

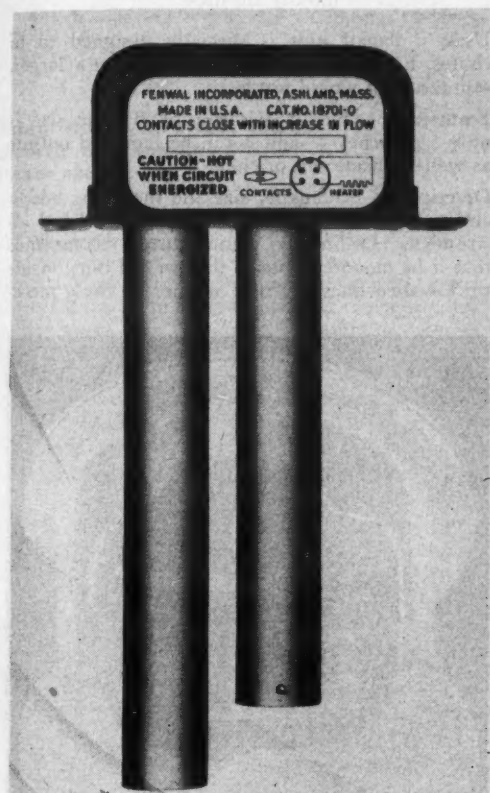
122 N. Madison Tulsa 6, Okla

When inquiring check CP 4023 on handy form, pgs. 2-3

CHEMICAL PROCESSING

INSTRUMENTATION & CONTROL

It operates on the principle that the amount of heat carried away from a heated body depends on the velocity of fluid passing it and/or the heat capacity of the fluid. One leg of unit is con-



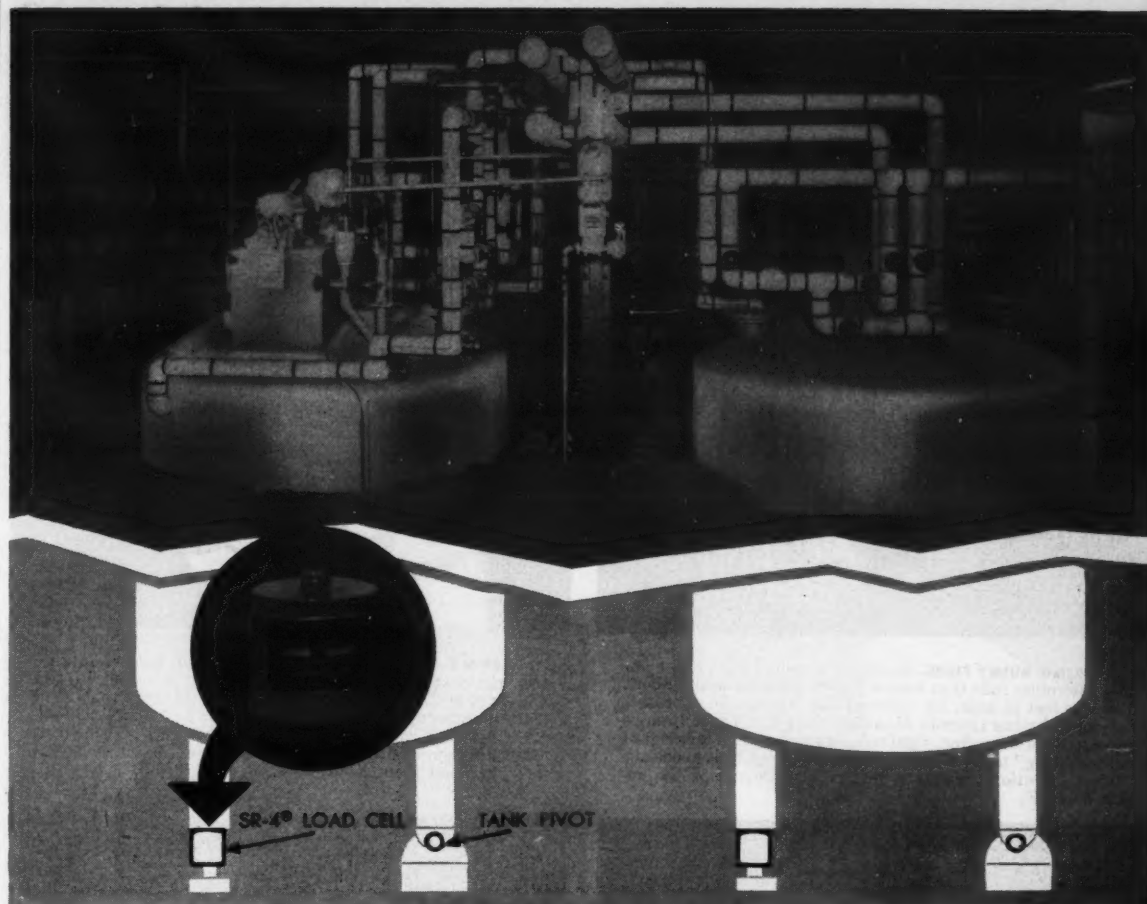
Can spot 0.1 inch liquid level change or 1 foot per second air velocity change

tinuously heated internally. As flow rate drops, heated leg becomes hotter, expands, and operates a lever linkage system. This mechanical linkage terminates in electric contacts contained in the other leg.

Unit operates at ambient temperatures from -65 to 175°F . Two-legged construction compensates from ambient temperature change. Furthermore, unit is hermetically sealed and is unaffected by vibration. Thus it can be in many types of service with good reliability and minimum maintenance. Sensitivity to flows varies from a change of 0.25 feet per second at low flow rates to less than 1 foot per second at high rates. Sensitivity to liquid level, even with liquids which are viscous, is about one tenth inch.

Unit measures $2 \times 2\frac{1}{4} \times 5\frac{1}{5}$ inches and weighs 8 ounces. Current model is designed for 28 volt AC/DC and draws 35 watts. A 115-volt model is forthcoming.

(Detect-A-Flo is manufactured by Fenwal Inc., Dept. CP, Ashland, Mass. . . . or for more information check CP 4024 on handy form, pages 2 & 3.)



Baldwin SR-4® Load Cells Permit Remote and Automatic Control of Latex "Batching"

THE PROBLEM:

In order to weigh liquid latex directly in the processing tanks, this leading rubber company sought a method which would require very little head room, use a minimum of steel and control various steps of each batch with $\frac{1}{2}$ of 1% accuracy.

THE BALDWIN SOLUTION:

Every requirement was met by the installation of a Baldwin SR-4 weighing system. Each 2,000 gal. tank, holding 16,000 pounds of latex, is supported by three legs. Two of the legs have rod-end bearings and the third rests on one 10,000 pound SR-4 Type C Load Cell. As the tank fills, changes in its weight are transmitted by electric cables from the cells to a switching unit and an indicator-controller on the upper floor.

This system offers these benefits:

- It controls automatically the entire batching operation, providing lights and alarms for empty and full conditions of the tank. It also has adjustable controls

between empty and full for sizing each particular batch by controlling motorized valves.

- The SR-4 system made it unnecessary to use much steel during installation. The small size of the load cells meant that the available headroom (14 inches) was ample.
- The SR-4 Cells' rugged construction and absence of moving parts, combined with good instrumentation and proper engineering, have enabled this system to maintain constantly its inherent accuracy of $\frac{1}{4}$ of 1% of capacity.
- Due to the electrical nature of SR-4 cells, they could be located on one floor and the indicating-controlling instrument on another.

SR-4 Devices in Industry... Uses Unlimited

For measuring load, fluid pressure, or torque more accurately and economically Baldwin SR-4 devices have *unlimited uses* in industry. Write for our two new booklets on tank weighing (No. 4106) and crane scales (No. 4105). Address: Dept. 3111 Baldwin-Lima-Hamilton Corporation, Philadelphia 42, Penna.



BALDWIN-LIMA-HAMILTON

Philadelphia 42, Pa. • Offices in Principal Cities • In Canada: Peacock Bros., Ltd., Montreal, Quebec

When inquiring check CP 4025 on handy form, pgs. 2-3

How would YOU solve these two problems?



1. STORING BULKY FILES. Engineers examine one of 90 compact microfilm rolls that reduce 70,000 drawings, each about 6 square feet in area, for space-saving storage. In a process developed by the Diebold Manufacturing Co. for continuous developing of microfilm, rigid THERMOSWITCH control is essential in the "fixing" tank. Fenwal THERMOSWITCH® unit keeps the "fixing" solution constantly within one degree of the required 100°F.



Photo courtesy of Hotel Statler, Boston

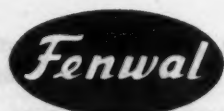
2. KEEPING DISHES SPOTLESS. For this full-time restaurant job, the Statler Hotels and other leading firms serving the public use Colt Autosan Dishwashing Machines. Fenwal THERMOSWITCH devices in these machines have two functions. The first is to control temperature of washing water. Other units act as low temperature cut-off switches — stopping the conveyor belt if water becomes too cold.



3. A FENWAL THERMOSWITCH CONTROL may solve your problems, too. Its external, single-metal shell expands or contracts *instantly* with temperature changes, making or breaking enclosed electrical contacts. Compact, highly resistant to shock and vibration, Fenwal THERMOSWITCH units have solved hundreds of otherwise costly problems.



4. SEND FOR THIS CATALOG for complete explanation of the unique THERMOSWITCH unit. Also ask for more detailed, illustrated discussions of the problems above. Fenwal engineers will be glad to help you solve your temperature control problems involving heat, humidity, radiant heat, pressure and other variables. Write Fenwal Incorporated, 2410 Pleasant Street, Ashland, Massachusetts.



THERMOSWITCH®

Electric Temperature Control and Detection Devices

SENSITIVE...but only to heat

When inquiring check CP 4026 on handy form, pgs. 2-3

INSTRUMENTATION & CONTROL

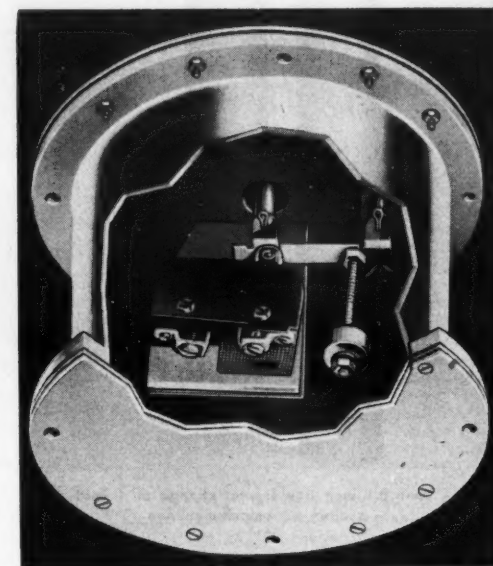
Small level indicator goes inside or out of bins . . .

overall diameter is only $5\frac{3}{4}$ inches — no springs or motors are used

Uses: Small unit is specially designed to fit chutes, hoppers, narrow bins, etc where a larger, standard unit would not fit.

Features: Overall diameter of Bantam size is only $5\frac{3}{4}$ inches — and it can be mounted outside as well as inside bin or chute.

Description: Smaller size and mounting adaptability are the major changes in this modified instrument. Ordinarily, manufacturer recommends that it be mounted outside thin-walled bins, inside thick-walled ones. Where neither of these meth-



Cutaway shows principal parts

ods is satisfactory, it can be suspended within the bin, hopper, chute, etc. Flexible diaphragm is 4 inches in diameter, allowing unit to work well with just about any free-flowing material.

Diaphragm movement actuates a Micro switch. Travel is limited to prevent overdriving the switch. No springs or motors are used. There is consequently no need for lubrication.

(Bantam Bin-Dicator has been developed by The Bin-Dicator Co., Dept. CP, 79-13946 Kercheval, Detroit 15, Mich. . . . or for more information check CP 4027 on handy form, pages 2 and 3.)

Pressures plus and minus

Thirty-two-page, two-color catalog on instruments delves into construction and control features of recorders, indicators and controllers. Tabulated

INSTRUMENTATION & CONTROL

sections compare types of measuring elements and show general recommendations for use.

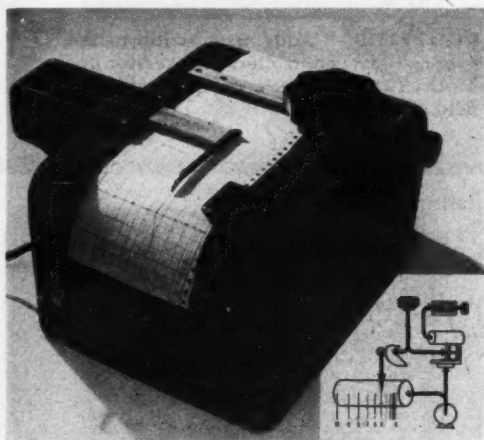
Cat 7001 is issued by Industrial Div., Minneapolis-Honeywell Regulator Co., Dept. CP, Wayne and Windrim Aves., Philadelphia 44, Pa. When inquiring specify CP 4028, pgs. 2 & 3.

Integrates square root charts directly and handles 3" linear charts, too . . .

integrator operates at either one or two feet of chart per minute

Integration of three-inch miniature graphic panel charts for totalizing of flow, load, etc., can be handled by this square root planimeter. Instrument provides true square root extraction and integration without approximation over range of flow. It can also be designed for linear chart paper if desired. Totalizing can be carried on from leading to trailing edge of chart paper without any paper "lead." Counter type read-out provides four place answer.

Motor driven sprocket carries paper over rolls. Hand knob is operated to make tracing needle follow curve drawn on the record. In square root model, cam in the set-up corrects for non-linearity. Motor used to



Hand knob allows pointer to be adjusted to follow trace. Inset (lower right) shows schematically how integrator operates

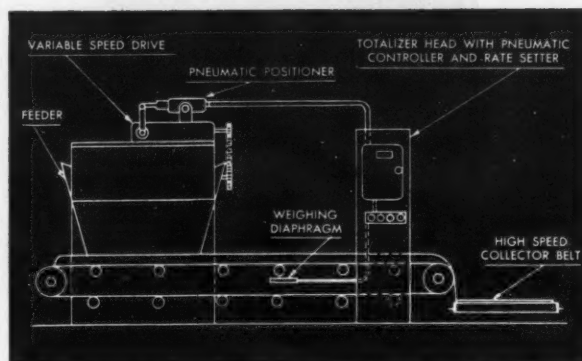
drive paper over roll is also used to drive a disc and adjustment of hand knob varies coupling of this disc to counter drive to provide integration.

Instrument is available to handle paper at either one or two feet per minute. It is designed to operate directly with standard paper used by many instrument companies. Dimensions are $8\frac{1}{8} \times 10 \times 4\frac{1}{8}$ inch deep and unit weighs ten pounds. Power requirement (115 v, 60 cps) is 35 watts.

(Square Root Planimeter is a product of Librascope, Inc., Dept. CP, 1607 Flower Street, Glendale, Calif. . . . or check CP 4029, pages 2 & 3.)

WEIGH IT

...on the Go!



Typical Conveyorflo installation showing Model CFAB-T Conveyorflo Meter controlling flow of tobacco in automatic blending process. Conveyorflo employs pneumatic controller to automatically control feeder output within very narrow tolerances.

Conveyorflo Meters are serving in many other process industries: food, soap, fertilizer, pharmaceutical, steel, paper, glass, heavy chemicals, mining, power. What's your processing problem?

CONVEYFLO FEATURES

- **ACCURATE** . . . within $\pm\frac{1}{2}$ of 1% of actual weight from maximum to 50% of rated capacity; within 1% from 50% to 25% rate; within 2% from 25% to 10% of meter's rated capacity.
- **COMPACT** . . . weight sensing mechanism completely contained within conveyor structure. No overhead levers. Panel stand only 9" x 18" — may be any height.
- **AUTOMATIC TOTALIZER COMPENSATION** for variations in belt speed and changes in belt weight.
- **RESPONDS ACCURATELY** to rapid load variations.
- **PACES AUXILIARY EQUIPMENT** (feeders, controllers, continuous blending processes, etc.) and operates secondary totalizers, indicators, recorders.

Weigh it with BUILDERS CONVEYFLO . . . the modern meter for continuous, accurate weighing of bulk material passing over conveyor belts. This precision meter can be equipped with a Controller to maintain any desired preset rate of delivery from the conveyor in which it is installed. Or it can be used to pace auxiliary feeders in automatic processing systems. Conveyorflo is furnished as a separate, self-contained unit— or for installation in your present conveyor lines.

BUILDERS
INDUSTRIES (DIVISION OF B-I-F INDUSTRIES) BUILDERS

SEND COUPON
FOR DETAILS

BUILDERS-PROVIDENCE, INC.
387 Harris Ave., Providence 1, R. I.

Please send Bulletin 550-H4 describing Builders Conveyorflo Meter.

Name

Company

Street

City State

When inquiring check CP 4030 on handy form, pgs. 2-3

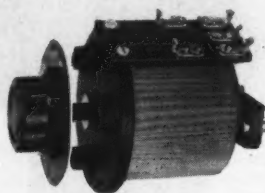
Silver-alloy coating on windings permits long life at fixed setting for variable transformer . . .

high initial surges and temporary overloads of 1000% can be handled

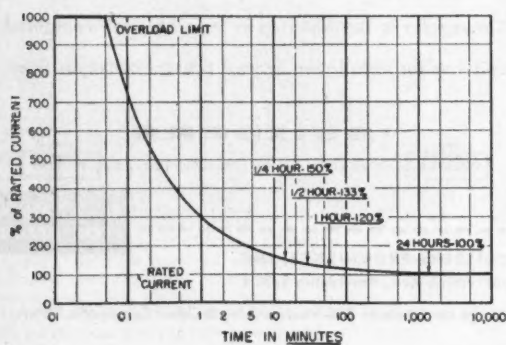
Uses: Variac[®] for general control work is wound with wire having silver-alloy coating on tracking surfaces.

Features: Silver alloy prevents contact surface deterioration even when operation at fixed brush settings is carried on continuously. Overload characteristics have been improved.

Description: Variable autotransformers have been widely used as control devices. Since they were rugged, they have often been "pushed" beyond their normal ratings and required to operate continuously at fixed brush settings. Service experience over several years has shown that the vast majority of failures that do occur in continuously adjustable autotransformers are caused by overheating at the brush, or at the winding underneath the brush. In order to remedy this situation, manufacturer is now using a silver alloy tracking surface known as Duratrack.



In lab tests of the improved design, a unit rated at 20 amperes was subjected to a load current (at mid-point setting) of 30 amperes for a period of one month. When no damage resulted from this test, transformer was housed in an insulated cubicle to simulate conditions of unusually poor ventilation. After several more days in the box at 30 amperes, transformer's load was raised to 45 amperes and held for four days. Ultimate test was to draw 100 amperes for a few minutes —



heating under these conditions caused organic insulation to char badly, but only slight discoloration and damage of the brush track was noted.

Use of the silver alloy tracking surface increases life of the variable transformer to about that of a fixed-ratio power transformer operated at the same loads.

6 Reasons

Wide range of selection of the basic controller unit to fit your application is represented by the five single-unit controllers illustrated below . . . five of the many reasons why Masoneilan Liquid Level Controllers offer you more for your money. The sixth is the

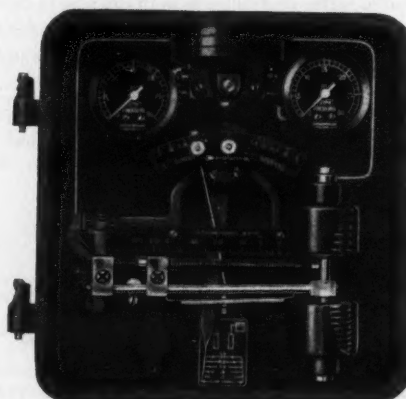
convenience of grouping any two of these in one case as illustrated in the model to the right. This range of selection enables you to obtain from *one* manufacturer the control equipment for almost any liquid level application.



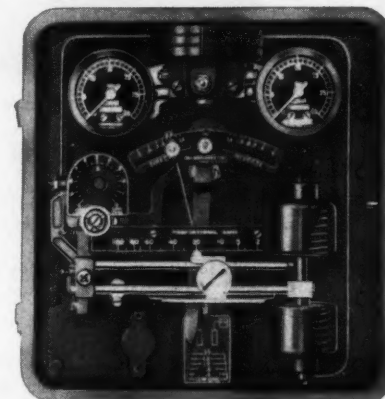
Model 12800 — The basic proportional controller; may also be used as a transmitter; may be converted in the field to a differential gap controller.



Model 12810 — Adds reset action to the proportional controller. Conversion of Model 12800 may be accomplished in the field if desired.



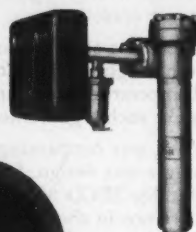
Model 12820 — The pneumatic transmitter provides an output air signal which is proportional to level changes, for indication, recording or control.



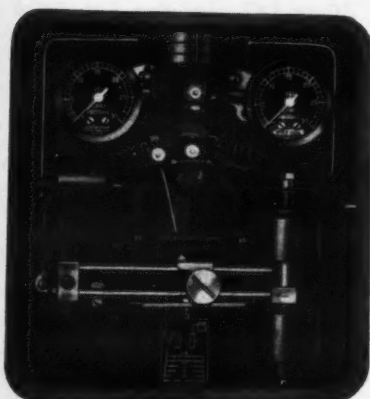
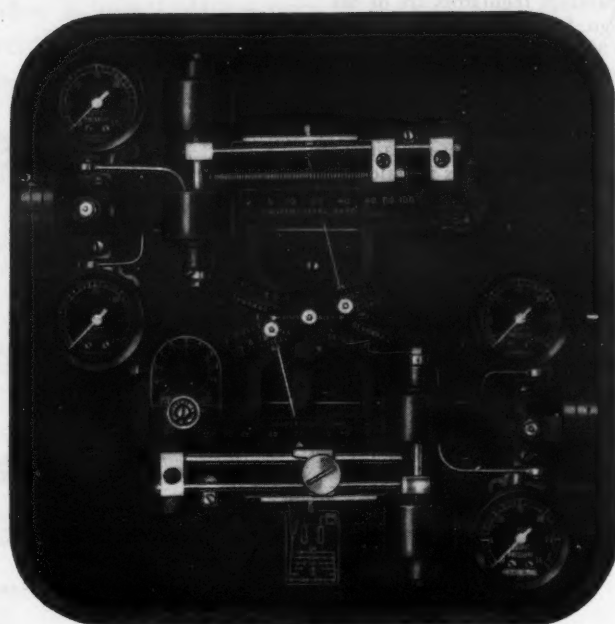
Model 12830 — The differential gap controller. May be converted to a proportional controller in the field if process changes require it.

TWENTY POSSIBLE

Why You Should Select Masoneilan Level Controllers



Model 12800-20 — A duplex model grouping the proportional controller and pneumatic transmitter. Any combination of two identical or dissimilar single units is possible — a total of fifteen combinations.



Model 12840 — The pneumatic set controller provides for remote adjustment of set point. Available with either proportional or proportional-reset action.

Simplicity of design; sensitive accuracy of control; wide choice of materials; ease of maintenance; convenience of installation; and sturdy, long lasting

construction are six other reasons why you should select Masoneilan 12000 Series Liquid Level Controllers.



MASON-NEILAN
REGULATOR CO.

1203 ADAMS STREET, BOSTON 24, MASS.

Sales Offices or Distributors in the Following Cities: New York • Syracuse • Chicago • St. Louis • Tulsa • Philadelphia • Houston • Pittsburgh • Atlanta • Cleveland • Cincinnati • Detroit • San Francisco • Boise • Louisville • Salt Lake City • El Paso • Albuquerque • Charlotte • Los Angeles • Corpus Christi • Denver • Appleton • Birmingham • New Orleans • Dallas • Seattle • Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

INSTRUMENT COMBINATIONS

When inquiring check CP 4031 on handy form, pgs. 2-3

INSTRUMENTATION & CONTROL

Improved design also allows units to stand initial surges ten times rated current and they do not have to be derated for incandescent lamp loads. Time-current curve shows safe allowable overload for improved transformer — value is considerably in excess of older style transformers.

Majority of manufacturer's types have been converted to silver alloy tracking surface.

("Duratrak" Variacs" are products of General Radio Co., Dept. CP, 275 Massachusetts Ave., Cambridge 39, Mass. . . or for more information reader may simply check CP 4032 on handy Reader Service slip, pages two and three.)

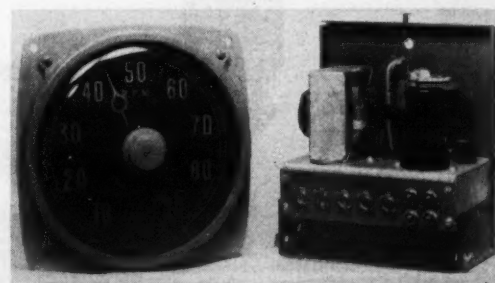
Monitors speed and controls accessory equipment . . .

will hold speed maximum or minimum, shift gears at pre-set speeds, etc

Uses: Provides direct indication of any shaft speed and exerts control action at specified speeds.

Features: Speed indication is attained through a mechanical tachometer and is exact. Control action takes place at minimum and maximum limits.

Description: Mechanical operation makes instrument immune to errors due to heat, moisture, magnetic currents, etc. Speed monitor head is driven by a flexible shaft attached to shaft being followed. Control setting is made by means of



Tachometer head is shown at left, control unit at right

independently adjustable maximum and minimum pointers. Instrument point, in this case, also acts as the center arm of a single-pole double-throw switch. Current across these control contacts is 3 micro-amperes or less.

Electronic control circuit can be used to operate relays for visible or audible signals, to shift gears, control temperature, etc. Load handling ability of the unit is 350 watts. It operates on standard 115 volt AC. (Special models can be supplied to operate on 35 or 70 volts DC.)

(Speed Monitor is a product of Jones Motrola Corp., Dept. CP, 430 Fairfield Ave., Stamford, Conn. . . or for more information reader may simply check CP 4033 on Readers Service slip, pages 2 and 3.)

Guaranteed
**TO
SHUT
TIGHT***

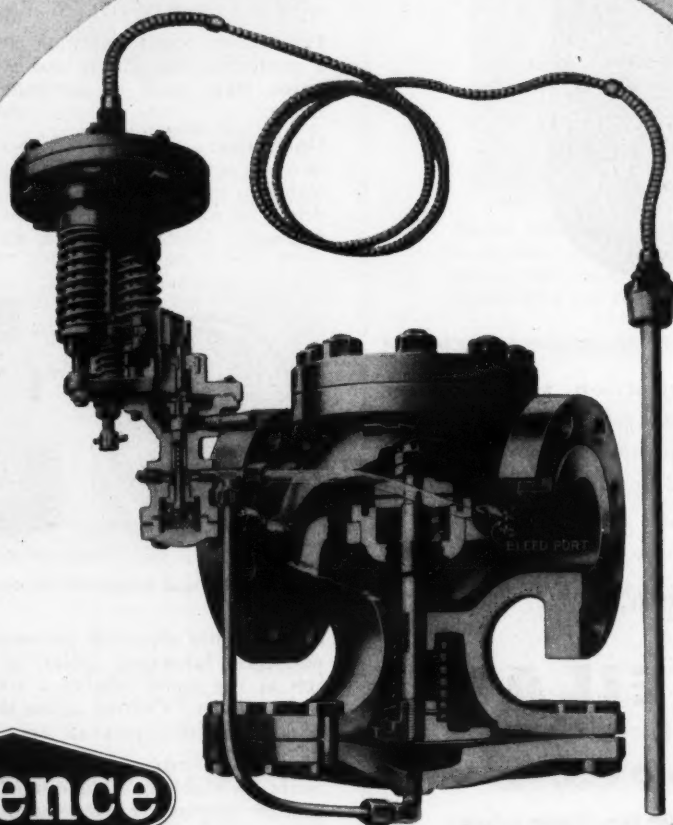
*When equipped with a SECO Metal Seat and Disc on steam service and protected by an approved Strainer, a Spence Regulator is guaranteed to shut tight when the demand for steam ceases.

Expensive steam leaks due to a lack of absolutely tight shutoff are eliminated in Spence Temperature Regulators. Here is why we can make such a guarantee:

First, our temperature regulators are of the single seat design. Seats and discs are made of durable SECO Metal. More than 20 years experience in thousands of installations has failed to produce a single case where SECO Metal has been cut by steam.

These plus other design features explain why Spence Temperature Regulators function dependably and accurately year after year without requiring expensive repairs or special attention.

Want more facts? Write for Bulletin T50 giving full details.



SPENCE
TYPE ET150
Temperature
Regulator

Spence

**SPENCE ENGINEERING
COMPANY, INC.**
WALDEN, NEW YORK

When inquiring check CP 4034 on handy form, pgs. 2-3

INSTRUMENTATION & CONTROL

**2 microamp signal suffices
for control of 100 ma
by relay**

Uses: Relay can be used to actuate control systems from very small electrical signals.

Description: Relay is sealed against moisture and incorporates self-shielded core magnet mechanism and a built-in solenoid release device. Variety of ranges are available. Each relay has



Accuracy with DC is $\pm 5\%$

magnetic contact which may be double or single. Arrangement allows contact to be made either with increasing or decreasing signal current. Contact capacity of parallel magnetic contacts is 100 ma at 120 v AC or DC. Accuracy with DC is $\pm 5\%$ and for AC $\pm 10\%$ (depending on circuit conditions). Sensitivity is 2 μ a.

Built-in solenoid, used for resetting magnetic contacts, consumes less than $\frac{1}{2}$ watt DC or less than 1 watt AC. Solenoids are furnished for 6 v DC service as standard, but 120 v AC solenoids are available. Outside magnetic fields have little effect on accuracy despite sensitivity of instrument. This is due to shielding. Relay is equipped with sealed zero corrector, solder terminal connections, and removable bezel for special mounting.

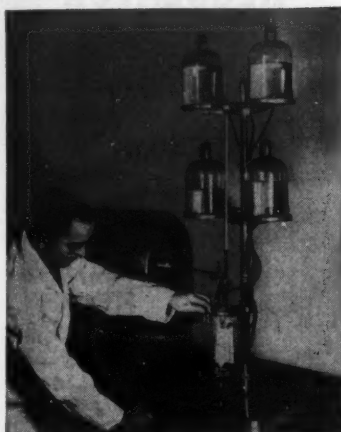
(Model 723 Sensitrol Relay has been developed by Weston Electrical Instrument Corp., Dept. CP, 614 Frelinghuysen Ave., Newark 5, N. J. . . . or check CP 4035 on form, pages two and three.)

**Wet-bulb, dry-bulb paper
contains table**

Printed in two colors, 4-page catalog describes installation and application of relative humidity instruments. Specifically, equipment is of the fluid-filled temperature element type — thermom-

PRACTICAL SULFUR ANALYSIS

Accurate Results in 3 MINUTES with the DIETERT-DETROIT SULFUR DETERMINATOR



No. 3104 Three Minute Sulfur Determinator

The Dietert-Detroit Sulfur Determinator used with the Varitemp or Hitemp Combustion Furnace provides the most practical means of getting results in a few minutes with accuracy equal to or better than any other method.

APPLICATIONS

Metals and Ores
Fuel Oil and Lubricants
Solid Fuels and Greases
Rubber and Plastics
Inorganic Sulfates
Organic Chemicals

FEATURES

Lowest First Cost
Simple Operation
Exact End Point
Visible Reagents
Efficient Bubbler
Meets A.S.T.M. Spec.

Let our chemists suggest a complete ready-to-go set-up to solve your sulfur analysis problems.



When inquiring check CP 4036 on handy form, pgs. 2-3

INSTRUMENTATION & CONTROL

eters are used in pairs, one wet bulb, one dry bulb. Publication is concerned with installation for natural circulation, blower circulation, and porous sleeve psychrometers in both open and closed systems.

Catalog contains a psychrometric table for use in interpreting dry and wet bulb readings as values of relative humidity.

Cat 12-A-20 is issued by Fischer & Porter Co., Dept. CP, 819 Jacksonville Rd., Hatboro, Pa. When inquiring specify CP 4037 on handy form, pages 2 and 3.

Temp ranges to 2250°F in contact-making pyrometer . . .

electronic tubes, millivoltmeter used with chromel-alumel thermocouple

Uses: Temperature control of high-temperature processes.

Features: Maintains temperature with an accuracy of 2%.

Description: Contact making instrument employs an electronic circuit embodying thermocouple break protection. In manufacturer's tests, 2% accuracy was maintained over more than a million contact cycles.

Temperature ranges extend to 2250°F. Contacts are rated at 5 amp non-inductive at 115 volts AC. Millivoltmeter is used in conjunction with a



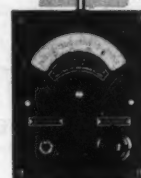
chromel-alumel thermocouple. Electronic portion employs standard 6AK6 and 6AL5 tubes.

(Cyber-Tac 505 Controller is a product of Cybertronic Corp. of America, Dept. CP, 136 8th St., Upland B-13, Chester, Pa. . . or in order to obtain more information reader may simply check CP 4038 on handy Reader Service slip located between pages two and three.)

must you pay a premium price for accurate instrumentation?

fielden says, "no!"—

with precise yet sensibly priced instruments like this TELSTOR Electronic Level Indicator. TELSTOR measures continuously—with accuracies to $\pm 2\%$ —the levels of liquids, viscous fluids, powders or granular solids. Remote readings can be recorded at distances greater than one mile.



Fielden TELSTOR Electronic Level Indicator for Accurate, Continuous Level Measurement of Liquids or Divided Solids.

Simplification is the reason for Fielden's economical instrumentation. TELSTOR, for example, has no moving parts—no floats to stick or leak—no pneumatic or hydraulic piping. Circuitry is simplicity itself and only one vacuum tube is employed. Measuring electrode and instrument are easily installed.

Unless you really need instrumentation of extreme precision (which inevitably costs more) get the facts about Fielden. Simplified Fielden instrumentation assures *all the accuracy you can use*—at an extremely worthwhile saving in initial cost and maintenance.

DOLLAR FOR DOLLAR—YOUR BEST INSTRUMENT VALUE



SEND FOR NEW
INSTRUMENT DATA TODAY.

INSTRUMENT DIVISION

ROBERTSHAW-FULTON CONTROLS COMPANY
2920 N. 4th St., Dept. G, Philadelphia 33, Pa.

Send full details of Fielden simplified ☐ TELSTOR Electronic Level Indicator ☐ TEKOR Electronic Level Control ☐ TEKTOLOG Electronic Recorder.

Name

Title

Company

Address City State



Fielden TELSTOR Electronic Level Control



Fielden TEKTOLOG Electronic Recorder

When inquiring check CP 4039 on handy form, pgs. 2-3

tools that

Streamline electrical maintenance

FOR ELECTRONIC TROUBLE SHOOTING ...



WESTON INDUSTRIAL CIRCUIT TESTER
(Model 785) the versatile 28 range super-sensitive portable tester.

Especially designed for checking electronic control and power equipment. Seven d-c voltage ranges: .1 to 1000 (20,000 ohms per volt) ... six a-c voltage ranges: 5 to 750 (1000 ohms per volt) ... six d-c current ranges: 50 microamperes to 10 amperes ... four a-c current ranges: .5 to 10 amperes ... five resistance ranges: 3000 ohms to 30 megohms ... all ranges full scale ... a-c and d-c current ranges extended with external transformer or shunts.



FOR MOTORIZED EQUIPMENT ...



WESTON CLAMP VOLT-AMMETER
(Model 633) measures current and voltage without breaking circuits.

Combines in one instrument five full-scale a-c current ranges of 1000/250/-100/25/10 amperes with range overlap for good readability ... three self-contained a-c voltage ranges of 700/350/-175 volts, with instrument insulated for 750 volt service. Has convenient 6-position thumb switch for range selection, and adjustable pointer stop for measuring motor starting current.

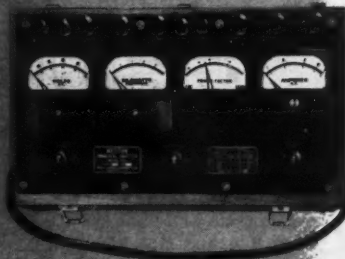


FOR POWER PROBLEMS ...



WESTON A-C INDUSTRIAL ANALYZER
(Model 639) a combined Voltmeter, Wattmeter, Power Factor Meter, Ammeter ... all interconnections made!

A real timesaver because only one hook-up is necessary to measure a-c current, voltage and power in single and polyphase circuits, as well as power factor in 3 phase, 3 wire, balanced circuits. Adequately insulated binding posts ... high overload capacity. In compact oak case measuring only 18 7/8" x 10 7/8" x 6 7/8".



AVAILABLE THROUGH LEADING DISTRIBUTORS

WESTON Instruments

WESTON Electrical Instrument Corp., 614 Frelinghuysen Ave., Newark 5, N. J. 4815

When inquiring check CP 4040 on handy form, pgs. 2-3

INSTRUMENTATION & CONTROL

Resistance changes actuate relay which can be used on control of level, etc ...

contact ratings are high enough to start fractional horsepower motors directly

Uses: Relay may be used to start or stop fractional horsepower motor directly when contact making ammeter, voltmeter, or wattmeter reaches required reading. Uses include liquid level control, and operation of lights, solenoids, etc.

Features: Stepless control adjusts relay sensitivity to resistance changes.

Description: Relay actuates two single-pole double-throw contacts permitting control of independent systems. Simple jumper change sets relay for normal or reversed operation. Selection of most favorable relay operating point is facilitated.

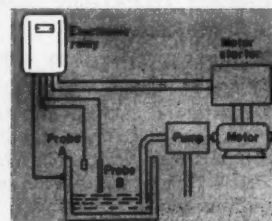


Photo shows relay unit. Schematic indicates how it can be used for level control

tated through sensitivity dial located on front of unit. Dial may be remotely controlled from as far away as 500 feet, and may be locked in position.

Relay is sensitive to electrical resistance changes. These will cause circuit to "pick-up" or "drop-out" a magnetic relay included in device. This allows unit to be used where ordinary relays would not operate because of low currents in circuit. Weak signal is amplified by electronic tube. Output of amplifier energizes coil relay.

Power requirements are 115/230 volts AC at 50/60 cycles. Required power should not exceed 10 volt-amperes. Contact rating is 10 amps with allowance for inrush of 30 amps in normally closed service. Normally open contacts are rated at 5 amps. Relay can be used to control DC power lines at reduced ratings. Built-in time delay is adjustable and has a 5 millisecond minimum.

(Electronic Resistance Relay is manufactured by General Electric Company, Dept. CP, Schenectady 5, N. Y. ... or check CP 4041, pgs. 2 & 3.)

Leak detection service when needed

Six-page illustrated bulletin describes custom leak detection service for vacuum or pressure systems. Text explains how unit can test nine samples simultaneously comparing leakage to standard.

It's Automatic!
It's Accurate!
It's Dependable!
It's Self Operated!

It's the LOW PRICED

TEMPERATURE REGULATOR



STACON SERIES V
for
STEAM
LIQUIDS
GASES

- SIMPLE, RUGGED, LOW COST, FIELD-REPLACEABLE THERMOSTATIC SYSTEM
- TIGHT SHUT-OFF; Self aligning single seated construction insures tightness.
- SUPER-POWER INSTANTANEOUS RESPONSE; Liquid expansion, throttling action, insures positive, constant control.
- OVERLOAD PROTECTION
- EXTREMELY COMPACT AND STURDY

Write for Bulletin ST-162 Today

Farris
STACON CORP.

400 Commercial Ave., Palisades Park, N. J.
AFFILIATES
FARRIS ENGINEERING CORP.
FARRIS FLEXIBLE VALVE CORP.
FARRIS HYDROTORQUE CORP.
FARRIS HYDROSEAL CORP.

When inquiring check CP 4042 on handy form, pgs. 2-3

CHEMICAL PROCESSING

INSTRUMENTATION & CONTROL

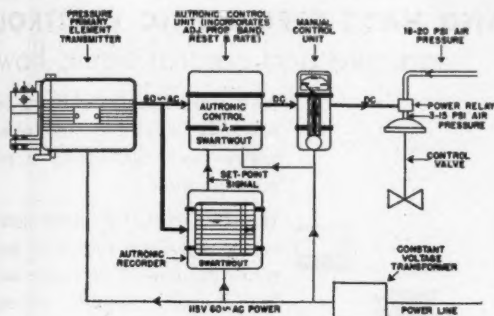
Service is capable of precisely locating leaks, quantitatively measuring them. Inert helium is used for service.

"Custom Leak Detection Service" is issued by Consolidated Engineering Corp., Dept. CP, 300 N. Sierra Madre Villa, Pasadena 15, Calif. When inquiring specify CP 4043, pages 2 and 3.

Recording, recording-controlling handled by two package units electronically . . .

continuously adjustable range setting and 50% zero suppression are features

Uses: As shown, two package systems are used for recording and recording-and-controlling pressures. With changes in sensing elements (and possibly minor changes in the system, depending on particular variable and circumstances) same systems could be used with other variables such as temperature, etc.



All components are replaceable without recalibration of system

Features: Systems feature continuously adjustable ranges and zero suppressions of up to 50% of actual span setting can be attained.

Description: Recording package is composed of primary pressure transmitter element, recorder, and a constant voltage transformer. Controlling-and-recording package includes these items and, in addition, a controller with proportional band and automatic reset, manual control, and a power relay. Proportional band and automatic reset adjustments on controller are not interacting. In measuring pressure, instrument systems would have minimum range of 0 to 40 psi and a maximum range of 0 to 5000 psi.

Since instrument system is entirely electronic, location of various units comprising the system is not restricted. Long distances between units do not introduce lag. Components are interchangeable without recalibration.

(Package Instrument Systems are products of The Swartwout Company, Dept. CP, 18511 Euclid Ave., Cleveland 12, Ohio . . . or for more information reader may simply check CP 4044 on handy form, pages 2 and 3.)



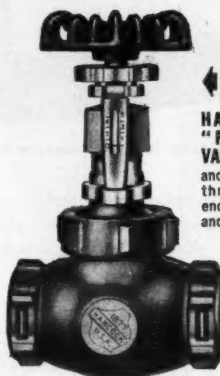
HANCOCK "FLOCONTROL" VALVES GIVE YOU PIN/POINT CONTROL

Here's manual control of flow, temperature and pressure that's really precise. Hancock "Flocontrol" Valves, with micrometer dial and pointer mounted on the bonnet, permit settings to within 1/100th turn of the handwheel! Equally important, any setting can be duplicated easily, perfectly — any time.

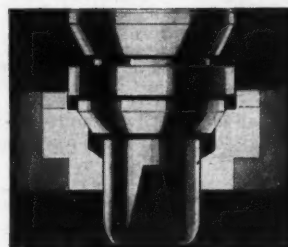
Hancock "Flocontrol" "3 in 1" design gives you the advantages of a variable orifice, plus a shut-off, plus an index . . . all in "one package." Bronze and steel types are available. Both have a scientifically designed V-Port valve disc that compels proportional flow throughout the entire lift of the valve stem. The shut-off seating surface is entirely removed and separate from the controlling V-Ports. Super-finished "500 Brinell" stainless steel seats and discs minimize the effects of wire-drawing and steam cutting.

For fine throttling control and proportional flow . . . for greatest efficiency, lowest operating costs — install strong, dependable Hancock "Flocontrol" Valves in your lines. Your nearby Hancock Distributor will gladly give you full details.

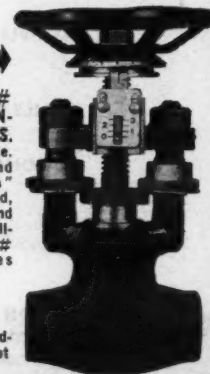
When Hancocks go in, valve costs go down



HANCOCK BRONZE "FLOCONTROL" VALVES. Types: Globe and Angle. Sizes: 1/4" through 2". Screwed ends. Available in 150# and 300# Series.



VALVE SEAT AND V-PORT DISC fully closed. As the valve is opened proportional flow is gradually increased. The Hancock "Flocontrol" Valve has straight-line flow. Its regulation does not depend on the short-wearing, fine threads common to a needle valve.



HANCOCK 600# STEEL "FLOCONTROL" WELDVALVES. Types: Globe and Angle. Outside Screw and Yoke. Sizes: 1/4" through 4". Screwed, Socket Welding and Flanged Ends. Available with 150#, 300# and 600# Series Flanges.

YOUR LOCAL INDUSTRIAL SUPPLY DISTRIBUTOR is as close as your nearest telephone. His 24-hour emergency service and large stocks of the finest supply items simplify your purchasing and save money for you.

HANCOCK VALVES

A product of **MANNING, MAXWELL & MOORE, INC.** Watertown 72, Massachusetts

MAKERS OF 'HANCOCK' VALVES, 'ASHCROFT' GAUGES, 'CONSOLIDATED' SAFETY AND RELIEF VALVES, 'AMERICAN' INDUSTRIAL INSTRUMENTS, AIRCRAFT PRODUCTS. BUILDERS OF "SHAW-BOX" AND 'LOAD LIFTER' CRANES, 'BUDGIT' AND 'LOAD LIFTER' HOISTS AND OTHER LIFTING SPECIALTIES.

When inquiring check CP 4045 on handy form, pgs. 2-3

Now **"Varec"** offers
a new Remote Reading
**ELECTRONIC TANK GAUGE
RECEIVER ...**

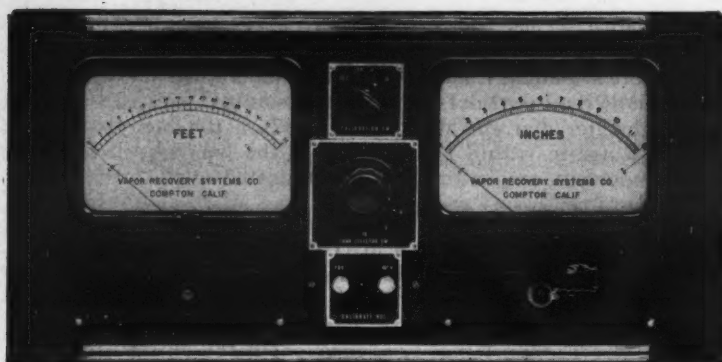


FIGURE NO. 8800 SERIES

**... for 36-foot Range Tanks
and Smaller**

SPECIAL DESIGN—This new "Varec" RECEIVER has the many advantages of our larger range RECEIVERS, but is especially designed for tanks not exceeding 36 feet in height.

INCREASED EFFICIENCY—Reduces operation costs and increases plant efficiency. Provides accuracy, unusual speed, sensitivity.

EASY READING—Allows larger increments on foot-reading scale, permitting easy reading.

FLEXIBLE INSTALLATION—Designed in Standard, Relay or "On Gauge" types in cabinet or panel styles and can be used with electronic alarms or controls.

CHOICE OF CALIBRATION—English, Metric or special calibration as desired.

REASONABLE UNIT COST—With all its attractive features, this Figure Number 8800 SERIES RECEIVER has a very reasonable first cost.

Get all the details and illustrations in Bulletin CP-3004, just off the press.

**THE VAPOR RECOVERY SYSTEMS COMPANY
COMPTON, CALIFORNIA, U. S. A.**

Cable Address: VAREC COMPTON USA (All Codes)

New York • Boston • Pittsburgh • Chicago • Detroit • St. Louis

Houston • Tulsa • Minneapolis • Los Angeles • San Francisco • Seattle

MAIL COUPON NOW FOR NEW BULLETIN CP-3004

THE VAPOR RECOVERY SYSTEMS COMPANY
2820 N. Alameda Street, P. O. Box 231
Compton, California, U. S. A.

Company Name _____

Name _____

Title _____

St. and No. _____

City and State _____

88-1

When inquiring check CP 4046 on handy form, pgs. 2-3

INSTRUMENTATION

**Multi-purpose design
features 20,000
ohms/volt ...**

meters milliamps, ohms, AC/
DC volts to 4000 v DC

Uses: Multi-purpose electrical meter checks AC and DC volts, resistance, and current.

Features: DC sensitivity is 20,000 ohms per volt.

Description: As well as DC volt sensitivity, electrical meter has 5000 ohm per volt AC sensitivity. Housed in 7-inch case, unit is compact. Resistance measurements and current measurements may be made as well as voltage checks — meter has 33 ranges.

Measurement accuracy on the 7-inch scale is 3% (DC volts) and 5% (AC volts). Auxiliary equip-



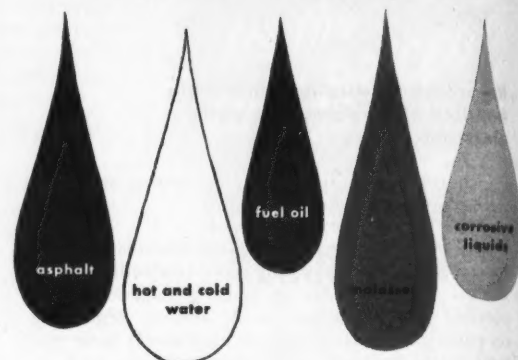
Meter is seven inches wide

ment supplied with meter includes test leads, removable alligator clips, 4000 volt DC multiplier and an operator's manual. Meter weighs four pounds.

(Model 262 Volt-Ohm-Milliammeter is a product of Simpson Electric Co., Dept. CP, 5200 W. Kinzie St., Chicago 44, Ill. . . or for more information reader may simply check CP 4047 on handy form, pages two and three.)

For a quick determination of feed rate to attain any ppm concentration in a flowing stream, see nomograph on page 210.

**viscosities
unlimited**



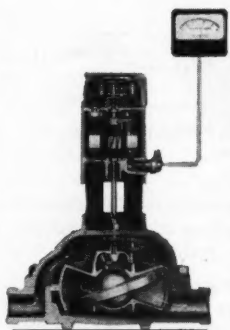
**HAYS VERIFLOW METER
AND HAYS ELECTRONIC VERITROL**
indicate and control liquid flow

Now virtually all fluids can be precisely measured and accurately controlled—from a remote position.

Hays VERIFLOW meter accurately measures, indicates, and totals the flow of corrosive and hard-to-meter liquids without using weigh tanks, orifice plates, or gage sticks.

With the Hays VERITROL you simply set a knob at the rate of flow desired . . . then, the VERITROL controls the flow of liquid at that set-rate.

Send for Pub. No. 53-766-38.



for corrosive liquids

Acetic Acid, Aluminum Potassium Sulphate, Ammonia, Calcium Compounds, Carbolic Acid, Formaldehyde, Fruit and Vegetable Juices, Hydrogen Peroxide, Phosphoric Acid, Potassium Hydroxide, Sodium Compounds, Sulphuric Acid (concentrated), Stearic Acid, and many others.

Automatic Combustion Control
Boiler Panels • Hays-Fenn Flowmeters
Veriflow Meters and Veritrol
Gas Analyzers • Draft Gages
Combustion Test Sets • CO₂ Records
Electronic Oxygen Recorders
Electronic Flowmeters
Electronic Feed Water Controls
Miniature Remote Indicators

hays
CORPORATION

MICHIGAN CITY 34 INDIANA

When inquiring check CP 4048 on handy form, pgs. 2-3

CHEMICAL PROCESSING

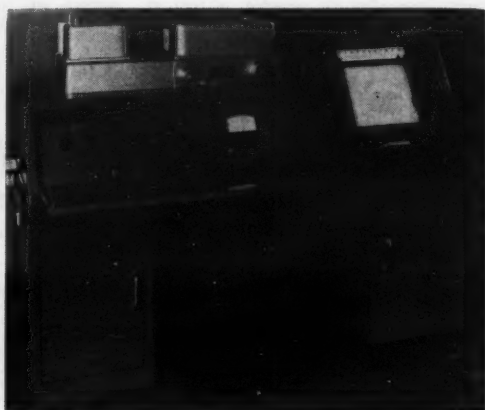
Recording instrument permits study of plant streams with infrared . . .

instrument combines lab-model flexibility with provisions for steam-monitor types

Uses: Designed to monitor concentration of as many as six components in liquid or gas stream. Unit is especially recommended for pilot plant work where concentration ranges, pressures, etc. may not be fully known.

Features: Automatic analyzer is provided with equipment for measuring concentrations in the process stream itself. Nonetheless, it retains flexibility of laboratory equipment — can be adjusted to all sorts of conditions.

Description: Red absorption of as many as six components are plotted on multipoint strip chart recorder. Complete cycling time is about six



minutes. Instrument itself is mounted in mobile metal console which can be moved to various locations on one or more streams.

Instrument allows direct study of effect of such variables as temperature, pressure, flow rate, etc. on composition of process stream. It also determines dependent and independent components in stream and can be used to advantage in determining what type of process infrared analytical equipment would be best for control. Earlier work in answering this question by means of batch samples analyzed in the laboratory determined that many important components exist only under stream conditions. These are missed in laboratory analysis.

This analyzer fills an important gap between laboratory and process stream analyzers. It has ruggedness to stand up under plant conditions and embodies automatic features needed for continuous analysis in normal pilot plant runs.

(Model 14 Automatic Multi-Component Analyzer is a product of The Perkin-Elmer Corporation, Dept. CP, Norwalk, Conn. . . or in order to obtain more information reader may simply check CP 4049 on handy Reader Service slip between pages two and three.)



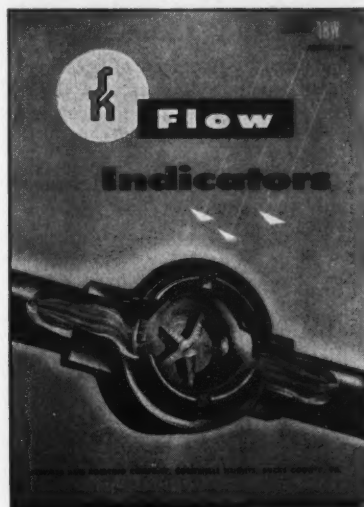
Design, Application, Operation of Flow Indicators Described In New Bulletin

Bulletin 18-W, illustrated at left, contains complete information on the many types of Flow Indicators manufactured by SK.

Flow Indicators, installed in pipelines, permit visual observation of fluid flow, direction of flow and flow conditions. These indicators are widely used throughout industry to prevent damage to valuable equipment.

SK Flow Indicators are suitable for service with any kind of fluid—liquid, gas, vapor, slurry, or sludge—provided the fluid is transparent enough to permit observation. They are designed to operate continuously—even under severe operating conditions—with minimum maintenance.

Request a copy of Bulletin 18-W for your files. It's a useful 12 page reference source.



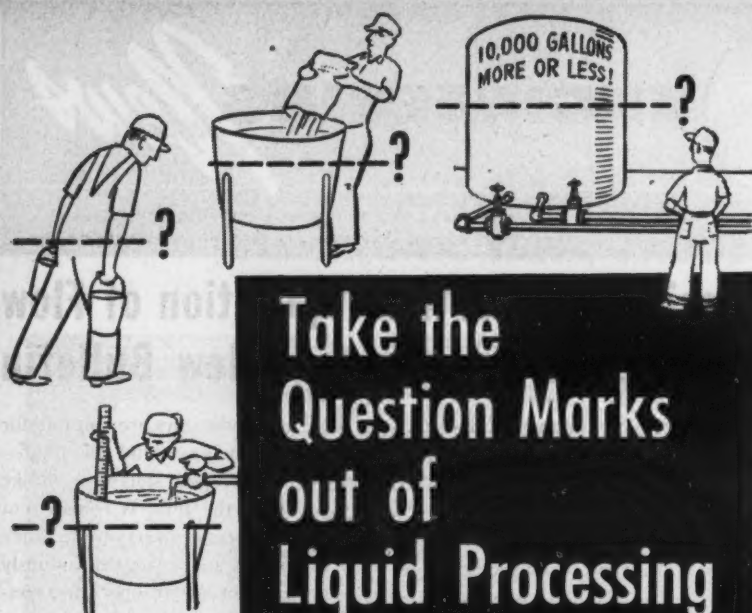
Details on SK FLOW INDICATORS incorporated in BULLETIN 18-W include:

- Design and construction features
- Materials of construction
- Tables of operating pressures, temperatures, dimensions
- Operating data
- Performance curve charts
- Ordering specifications

NOTE: For information on SK Rotameters, accurate fluid flow measuring instruments, request Bulletin 18-RA which pictures and briefly describes the many types manufactured by SK.



When inquiring check CP 4050 on handy form, pgs. 2-3



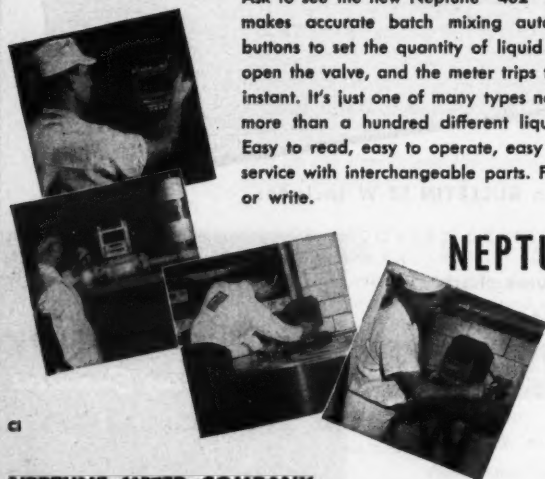
Take the Question Marks out of Liquid Processing

WITH *Accurate* NEPTUNE METERS

Why use wasteful methods of measurement when accuracy is so easy with Neptune meters? Fine-instrument precision gives you constant control over product quality at all times. No chance for human errors—the meters quickly pay for themselves by putting an end to spoiled batches, over-filling, spillage, etc. They save time, too, by eliminating slow weighing or batch tanks. Simple, easy to clean, they boost good house-keeping by keeping messy or hazardous liquids inside the pipe.

AUTOMATIC BATCH CONTROL

Ask to see the new Neptune "432" Auto-Stop—the meter that makes accurate batch mixing automatic. You simply push buttons to set the quantity of liquid required by the formula, open the valve, and the meter trips the valve shut at the right instant. It's just one of many types now available for handling more than a hundred different liquids. Composition bronze. Easy to read, easy to operate, easy to calibrate, and easy to service with interchangeable parts. For quick facts, just phone or write.



NEPTUNE METERS for 100 Industrial Liquids

NEPTUNE METER COMPANY

50 West 50th Street • New York 20, N. Y.

Branch Offices ATLANTA • BOSTON • CHICAGO • DALLAS • DENVER • LOS ANGELES • LOUISVILLE • MO. KANSAS CITY, MO. PHILADELPHIA • SAN FRANCISCO • PORTLAND, ORE. • Canadian Factory: TORONTO 14, ONT.

When inquiring check CP 4051 on handy form, pgs. 2-3

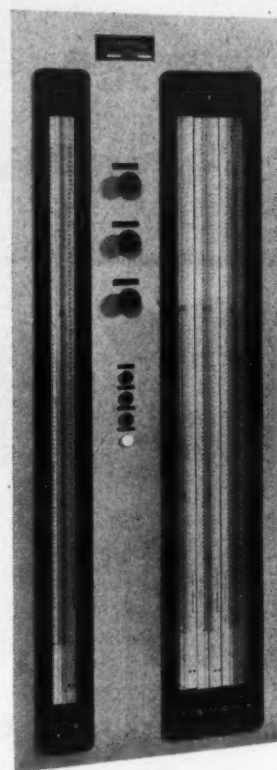
INSTRUMENTATION

"Manometer" can measure pressures at once to 600" Hg...

pressuring liquid-column instrument does the trick

Uses: Pressurized manometer instrument can measure five pressures at once with total range of 600 inches of mercury.

Features: Accuracy of measurement can be one part in a thousand or greater and instrument provides typical benefits of manometer measurement (lack of hysteresis, etc) yet has a reasonable size.

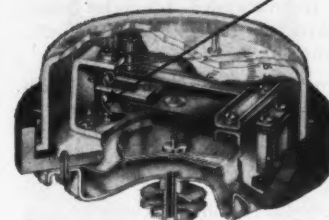


Balances measured pressure against known pressures to bring variable within range of mercury tube

Description: In order to keep U-tubes from being excessively long when measuring high pressures with mercury, this pressurized manometer uses known pressures to balance against pressure to be measured. Thus several mercury tubes are employed, depending on head to be measured. Pressurized manometer consists

Only DWYER MAGNEHELIC GAGE has the ultra-sensitive "MAGNETIC LINK"

Not subject to surge or vibration damage



The exclusive "Magnetic Link" is a Dwyer Development offering extreme sensitivity, low cost and a ruggedness that makes the Magnehelic Gage ideal for portable, as well as stationary, use. Long life and trouble-free operation is assured. Ranges from 0-1" of water to 0-2 psi.

EXCEPTIONALLY VALUABLE FOR MEASURING

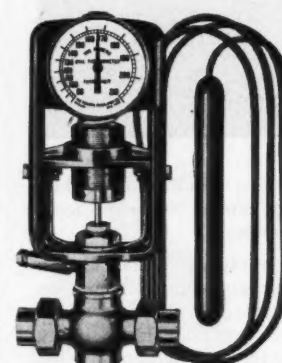
- Filter Resistance
- Air Velocity
- Furnace Drafts
- Static Pressures
- Gas Pressures
- Checking — Flow meters, control equipment, automatic valves, gas-air ratio controls, etc.

Request Bulletin No. 250

F. W. Dwyer Mfg. Co.

335 SOUTH WESTERN AVENUE • CHICAGO 12, ILLINOIS

When inquiring check CP 4052 on handy form, pgs. 2-3

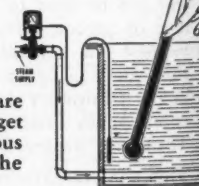


NEW POWERS REGULATOR

For

Plating • Anodizing
Bonderizing • Pickling
Cleaning • Rinsing

Holds temperature where you want it.



Saves LABOR and Steam Helps Eliminate Costly Rejects

Powers No. 11-MF Regulators are self-operating. They will help you get the most effective use from various solutions by holding them at the right temperature automatically.

Plastic Covered Thermal Bulb and Tubing—is highly resistant to solutions in above processes. Prevents electrical shorts. No insulators required for the regulator.

Easy to Read 4" Dial Thermometer—indicates temperature of liquid being controlled and makes it easy to adjust regulator for different temperatures.

Bulletin 330 describes this simple, dependable control. May we send you a copy? (b31)

THE POWERS REGULATOR CO., SKOKIE, ILL.
Offices in over 50 Cities, see your Phone Book • Established in 1891

When inquiring check CP 4053 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Work with asphalt? mayonnaise? resins?

TEST • STUDY • CONTROL VISCOSITY

As Simply, Quickly and Easily
as Taking Temperature Readings

WITH A
Brookfield
SYNCHRO-ELECTRIC
VISCOMETER

Just a flick of a switch, then read the Brookfield dial, and you have your viscosity determination in centipoises. The whole operation, including cleaning up, takes only a minute or two.

Available in a variety of models suitable for extremely accurate work with both Newtonian and non-Newtonian materials, Brookfield Viscometers are portable and plug in any A.C. outlet. Write today.

An Illinois company using Brookfield Viscometer 60 times a week on resin solutions reports: "Has enabled more efficient viscosity control as plant personnel can conduct tests without waiting for laboratory analysis."

Write Dept. A., Stoughton, Mass.

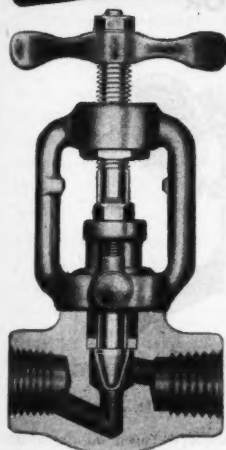
BROOKFIELD ENGINEERING LABORATORIES, INC.

When inquiring check CP 4054 on handy form, pgs. 2-3

PRECISION REGULATION

Edward Instrument

Valves



New Edward Fig. 952 series instrument valves, so compact they fit limited spaces in such hook-ups as panel boards and manifolds, give precision regulation for meter, gage, regulator, by-pass and instrument lines of all types. Forged steel, globe or angle. Rated 6000 lb WOG, 1500 lb 850 F in carbon steel. Also in stainless steels with higher ratings.

- No bonnet joint to leak.
- Swing bolted gland for easy packing.
- Needle point stem, fine pitch threads for accurate regulation.

WRITE FOR NEW BULLETIN

Bulletin 491, with full details, is yours for the asking.

Edward Valves, Inc.

Subsidiary of ROCKWELL MANUFACTURING COMPANY
1230 West 144th Street, EAST CHICAGO, INDIANA

When inquiring check CP 4055 on handy form, pgs. 2-3

INSTRUMENTATION

of a control panel, control cabinet, and total pressure manometer. Control panel is a source of accurately controlled pressures in two or more equal increments of predetermined range. It contains primary air filters, gages, pressure regulators, flow rate regulators, and isolating valves. Control panel is, within itself, a pressurized system which pressurizes the total pressure manometer as needed. First increment of pressure is represented by left tube of control pressure manometer and second increment is represented by right tube of control panel manometer. Each of these is capable of being held precisely at its predetermined value.

Control cabinet contains sensing mechanism which automatically places valves in operation to apply required increments of pressure to low pressure side of total pressure manometer. Total pressure measured is indicated on single manometer of dual tube well type.

Unit has been in use for about one year.

(Pressurized manometer is a development of The Meriam Instrument Co., Dept. CP, 10940 Madison Ave., Cleveland 2, Ohio . . . or for more information check CP 4056 on handy form, pages 2 and 3.)

Shows remote gaging in operation

Colored drawings and photographs in 16-page bulletin show construction and operation of remote level gaging equipment. Essential information about accuracy, speed, economy, versatility, and operational requirements and components is included.

Instrument system can employ wired or wireless transmission for reading tank levels accurately at distances up to several miles. Transmission distance is actually unlimited where reasonably good transmission facilities are used.

Bul VG-353 is issued by Shand & Jurs Co., Dept. CP, Eighth and Carlton Sts., Berkeley, Calif. When inquiring specify CP 4057 on handy form located between pages 2 and 3.

NOW... ALL roll and dial recording charts from ONE SOURCE

Over 8000 different charts for recording instruments can be supplied by **Technical**. This unique service means savings in ordering . . . in receiving . . . in stocking . . . and in chart costs, too.

All **Technical** charts are produced by means of precision plates cast from carefully made wax engravings. **Technical's** inventory for immediate shipment consumes over two miles of shelving.

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TECHNICAL CHARTS INCORPORATED
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Nationally Represented by **TECHNICAL SALES CORPORATION**, 15464 James Couzens Highway Detroit, Michigan

When inquiring check CP 4058 on handy form, pgs. 2-3

Can you afford to be without corrosion-resistant thermometers?

Production errors caused by thermometer failures can be mighty costly.

The corrosion-resistant, pressure-tight construction of Rochester dial thermometers saves you this sort of expensive trouble. And it practically doubles the life of the thermometer under severe operating conditions.



An exclusive stainless steel welding process bonds case, stem and nut into a single corrosion-resistant unit.



RECALIBRATE ON THE JOB

Rochester dial thermometers are built to stay accurate under rough treatment. But if an unusually hard blow knocks the pointer out of adjustment, you can recalibrate it quickly and

easily by turning a single screw.

You can order money-saving Rochester thermometers from one of our specialized instrument representatives, listed in Sweet's Catalog or the yellow pages of your telephone directory. Or write us direct for further details.

MILLIONS of Rochester dial thermometers are now delivering dependable service

Rochester
DIAL THERMOMETERS GAUGES AMMETERS

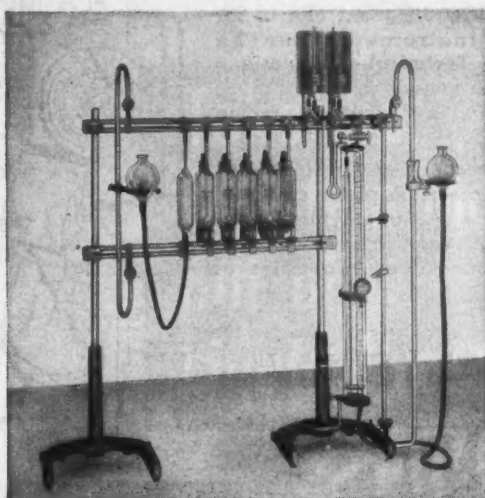
Manufacturing Company, Inc.
86 Rockwood St., Rochester 10, N. Y.



When inquiring check CP 4059 on handy form, pgs. 2-3

BURRELL*"For Scientists Everywhere"*

GAS ANALYSIS APPARATUS



Popular Build-Up Laboratory Models

DELUXE MODEL J (pictured) Complete and versatile. Simple or complex mixtures can be analyzed with speed and accuracy. For operation on 115 Volt, AC or DC.

CAT. NO.	ITEM	PRICE
38-772	Gas Analyzer, Deluxe Model J (Complete, except for solutions)	425.00

Burrell Industro Gas Analyzers

COMPACT AND PORTABLE
FOR "ON-THE-JOB" USE

INDUSTRO* MODEL B (pictured.)
For carbon dioxide, oxygen and carbon monoxide. No glass stopcocks; no needle valves.

INDUSTRO* MODEL C Has added facilities for more complex mixtures such as three components plus two combustibles.

For use with 115 Volt, AC or DC.

ALSO AVAILABLE—A selection of gas analyzers for general and specific purposes. Ask for Manual for Gas Analysts—7th edition, and Gas Analysis Catalog No. 81.



CAT. NO.	ITEM	PRICE
40-703	Gas Analyzer, Industro Model B (Complete, with carrying case and set of solutions)	117.50
40-707	Gas Analyzer, Industro Model C (Complete with carrying case and set of solutions)	180.00

Prices listed are F.O.B. Pittsburgh, Pa.

BURRELL CORPORATION
Manufacturers and Distributors of
SCIENTIFIC APPARATUS and LABORATORY CHEMICALS
2223 Fifth Avenue, Pittsburgh 19, Pennsylvania

When inquiring check CP 4060 on handy form, pgs. 2-3

INSTRUMENTATION

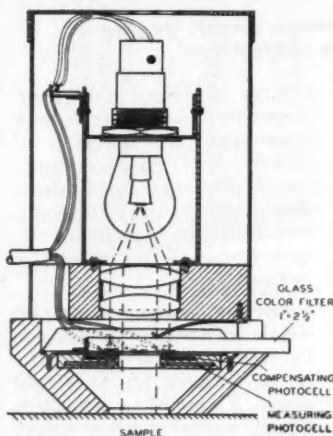
Reflectometer accessories for a host of jobs

Recently developed accessories can be used with photoelectric reflection meter so that it is capable of performing many tests and evaluations. Basic instrument is designed for measuring diffused reflection of surfaces as an indication of color or degree of whiteness. It is widely used for tests on paper, fabrics, paints, ceramics, plastics, etc. Another series of evaluations which can be performed with it includes tests on powders, flour, starch, clay, pigments, and similar materials.

Color filter may be used so that instrument furnishes readings of reflectance in specific spectral bands and this permits tests on detergency, fading of paints, and other situations where color changes as well as reflectance changes are involved.

Meter consists of two parts: instrument proper contains indicating meter, power supply, and controls; other component is "search unit" which comprises light source unit and photocells. Standard search unit is illustrated in drawing. It is composed of a six-volt automobile headlight lamp with concentrated filament. Light is collimated, passing through glass filter, and strikes test surface perpendicularly forming a circle about $\frac{3}{4}$ " in diameter.

Search unit may be fitted with gelatin or glass filters for single color



or tristimulus work. Seven monochromatic filters are also available.

(Model 610 reflection meter and accessories are products of Photovolt Corp., Dept. CP, 95 Madison Ave., New York 16, N. Y. . . . or check CP 4061, pages 2 and 3.)

in just **3** seconds



...you can read any surface temperature in your plant...accurately and easily . . . with the Alnor Portable Pyrocon.

Compact in size, complete in precision design and workmanship, this rugged instrument assures the highest standards of speed, accuracy and dependability. You can take temperature readings on materials in process, the finished product or the heated equipment itself—in as few as 3 seconds!

Alnor Portable Pyrocons come in scale ranges to 2000° F. with thermocouples for every application. You'll find full details on the Pyrocon exactly suited to your operations in Bulletin 4257. Send for your copy now. Write: Illinois Testing Laboratories, Inc., Room 504, 420 N. LaSalle St., Chicago 10, Ill.

Alnor

PRECISION INSTRUMENTS
FOR EVERY INDUSTRY

When inquiring check CP 4062 on handy form, pgs. 2-3

CAMBRIDGE SURFACE TENSION INDICATOR



For Measuring Surface and Interfacial Tension

The Cambridge Surface Tension Indicator is based on the instrument designed by Dr. P. L. de Noüy for the measurement of the surface tension or interfacial tension of liquids by the ring method. An accurate determination is possible in one to two minutes with this instrument. It is particularly useful for tests of surface tension of liquids which are available only in small quantities. In such tests a watch glass or silver vessel is substituted for the cylindrical vessel shown. Send for Bulletin 7A.

CAMBRIDGE INSTRUMENT CO., INC.

3706 Grand Central Terminal, New York 17, N. Y.

PIONEER MANUFACTURERS OF PRECISION INSTRUMENTS

When inquiring check CP 4063 on handy form, pgs. 2-3

CHEMICAL PROCESSING

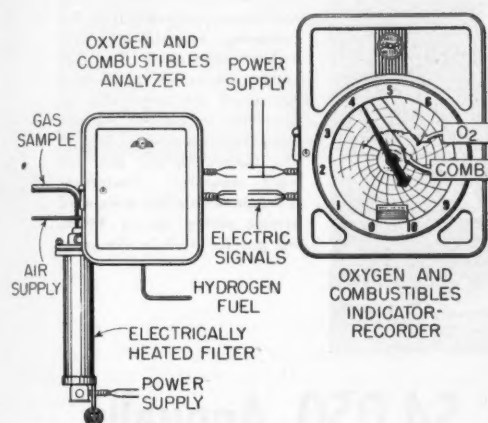
**Oxygen, combustibles
on same record . . .**

one instrument monitors both in combustion

Uses: Analyzes fuel-air mixtures, acts as safety monitor on unlit combustion chambers, etc.

Features: Instrument indicates oxygen and combustibles separately, but records both simultaneously on same round-chart. It can also take over control function, maintaining "best efficiency" conditions.

Description: Complete instrument and sampling system is composed of a sampling tube which enters flue or chamber, washing and cooling system if required, and the analyzer and recorder shown. Recorder may be located at distances up to 500 feet from analyzer. Performance meets



Principal components of system that analyzes for up to 25% oxygen and combustibles simultaneously

these requirements: accuracy is $\pm 0.25\%$ by volume for either oxygen or combustibles; systems is sensitive to less than 0.05% change in oxygen or combustible content; recorder will respond to 63% of a change in less than fifteen seconds.

Required services are 250 watts of 115 volt AC, 5 to 7 cubic inches of hydrogen per minute and clean air at 2 to 5 psig. Sampling rate is about 1.5 cfm.

Hydrogen is used in measuring oxygen content. It is burned at a noble metal filament. Resistance change of the filament provides a signal for electronic recorder. Similarly, combustibles are burned, using supplied air, and a second filament provides combustibles signal. Hydrogen consumption is such that a 180 cu ft cylinder will last about 6 weeks.

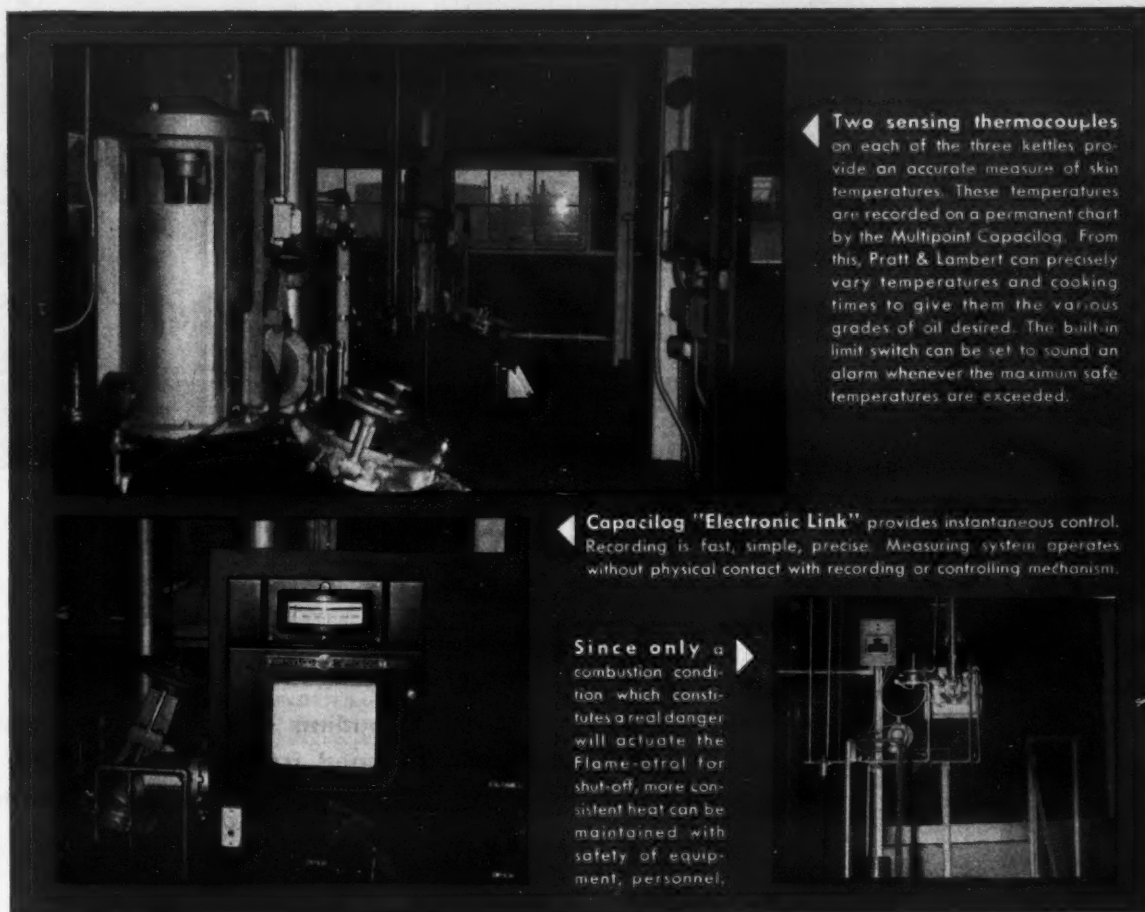
Variety of ranges are available, minimum (for either oxygen or combustibles) is 0 to 5%, maximum is 0 to 25%.

(Oxygen & Combustibles Analyzer is a product of Bailey Meter Co., Dept. CP, 1050 Ivanhoe Road, Cleveland 10, O. . . or check CP 4064, pgs. 2 & 3.)



Wheelco Instruments

**assure maximum
efficiency of kettles at
PRATT & LAMBERT, INC.**



Two sensing thermocouples on each of the three kettles provide an accurate measure of skin temperatures. These temperatures are recorded on a permanent chart by the Multipoint Capacilog. From this, Pratt & Lambert can precisely vary temperatures and cooking times to give them the various grades of oil desired. The built-in limit switch can be set to sound an alarm whenever the maximum safe temperatures are exceeded.

Capacilog "Electronic Link" provides instantaneous control. Recording is fast, simple, precise. Measuring system operates without physical contact with recording or controlling mechanism.

Since only a combustion condition which constitutes a real danger will activate the Flame-otrol for shut-off, more consistent heat can be maintained with safety of equipment, personnel.

Write for Bulletins C2-2 and F2-3

*Factory-trained field engineers
in all principal cities*

BARBER-COLMAN COMPANY, ROCKFORD, ILLINOIS
Industrial Instruments • Automatic Controls • Air Distribution Products
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BARBER-COLMAN COMPANY, DEPT. J, 1520 ROCK ST., ROCKFORD, ILLINOIS

Gentlemen: I'm interested in Wheelco:

☐ Recorders ☐ Controllers ☐ Combustion Safeguards

Name _____

Firm Name _____

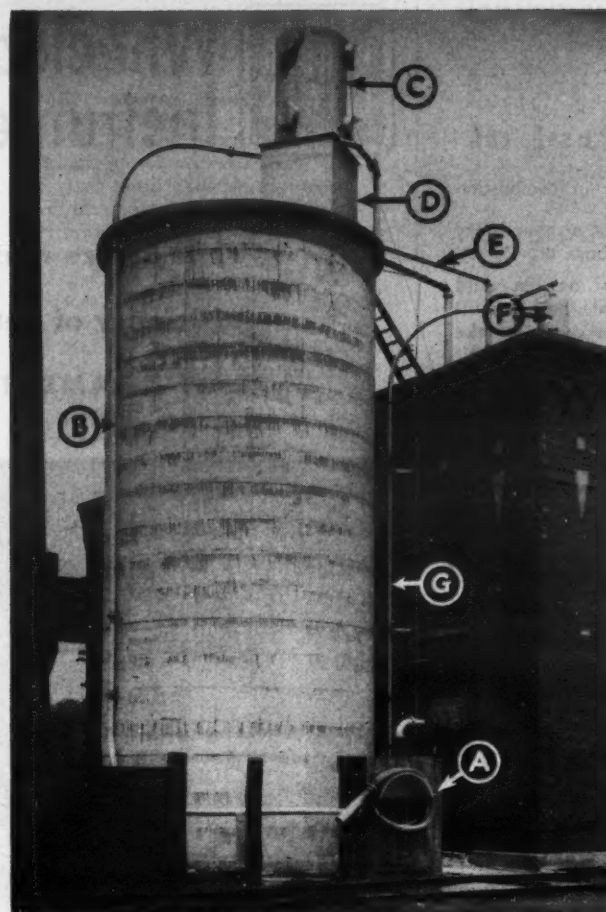
Address _____

City _____ State _____

When inquiring check CP 4065 on handy form, pgs. 2-3



Fig 1 One man with suction nozzle can now unload 40-ton boxcar of pebbled lime at rate of 100 lb/min. Old system required six men to empty trailers which delivered the material in bags



material handling

Overall picture of pneumatic conveying setup for inducing pebbled lime into city's water softening system. Visible equipment includes: A) storage rack for conveyor hose and nozzle; B) pipeline for conveying material to secondary separator; C) secondary separator; D) housing for rotary discharger; E) return line to blower; F) primary separator, and G) 4" line connecting silo and primary separator. Equipment is responsible for estimated annual saving up to \$4050, will pay for itself in five years

One Man Empties 40-ton Boxcars, Saves up to \$4,050 Annually

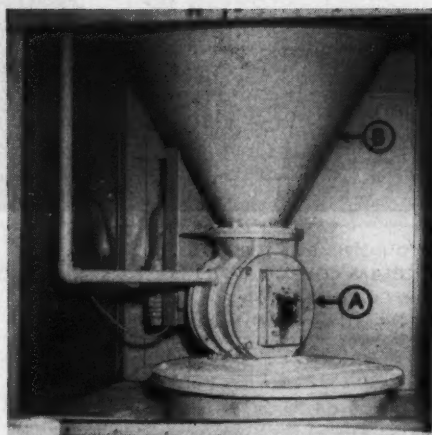


Fig 2 Rotary discharger (A) drawing material from cone of secondary separator (B) prevents loss of vacuum in pneumatic handling system

Unloading cost per ton of pebbled lime for city's water chopped from \$2.14 to \$0.30; required time slashed two-thirds with pneumatic handling system

PROBLEM: To precipitate the calcium hardness of water from Tonawanda Creek which supplies Batavia, N.Y., pebbled lime must be handled by the filtration plant's water softening equipment. Formerly, bags of pebbled lime were unloaded from freight cars or trailers onto pallets and hoisted to the second floor of the water plant for storage. This phase of operation required the labor of six men. The bags were again handled from the storage room and induced into the water system as needed.

Solution: A pneumatic conveying system was installed to handle the pebbled lime. (See over-

all picture above). Under the new setup, the material (varying in size from 1" diam to fine powder) is now received in bulk in 40-ton boxcar loads and stored in a silo 40' high and with a capacity of 120 tons. In transferring the material from the boxcar into the silo only one man is needed to guide the 25' conveyor hose with nozzle (Fig 1) which sucks up the material into the secondary separator on top the silo and at a rate of 80 mph. There, a rotary discharger (Fig 2) sends it below for storage and without destroying the vacuum seal in the separator itself. Special construction of the nozzle allows the pebbled lime

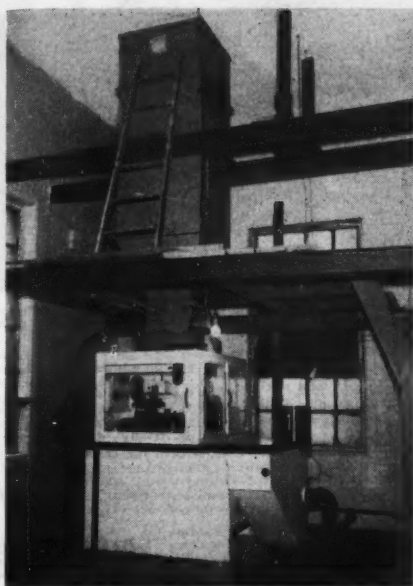


Fig 3 From the day bin, Omega belt-type gravimetric feeder sends pebbled lime into water softening device

to be drawn into the air stream and carried through the 4" diam conveyor hose. This system makes it possible to unload the boxcar at a rate of approximately 100 lb/min.

Filter bags in the separator filter out any material that is now separated in the cyclone effect in the bottom of the separator. The vacuum line runs

(Continued on page 85)

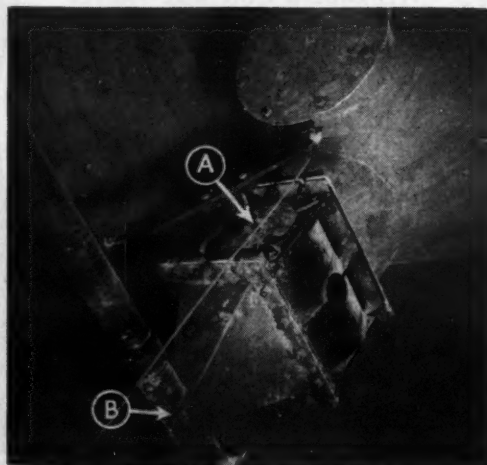


Fig 4 Omega valve (A) and vacuum feeder (B) attached at bottom of cone in silo

HANDLING "TOUGH" MATERIALS?—



A 60' Carrier Natural-Frequency screening conveyor for clay products, with 24" pan made of 1/4" steel plate. Capacity: 100 tons of 100-pound material per hour. 5 H.P. drive. Middle section of screen removed to show supporting bridge.

Close-up of drive — note patented drive linkage which always places weight of vibrating pan and conveyed materials on the spring supports, and never allows these loads to be imposed on the eccentric shaft and bearings.

anything that's hot, sharp, powdered, oily, abrasive, sticky, granulated or stringy?

Check These Advantages!

- **LESS POWER REQUIRED**
(1000 foot-tons per hour per H.P.)
- **LESS MAINTENANCE & DOWN-TIME**
(Less power + good design = good service)
- **GREATER CAPACITY**
(From a dribble up to 200 tons per hour)
- **HIGH CONVEYING SPEED**
(Up to 100 feet per minute, on flat hauls)
- **NO DAMPENING UNDER LOAD**
(Designed with extra power for specified load, with positive stroke)
- **SELF CLEANING**
(Continuous smooth trough — no pockets)
- **SCREENS, DEWATERS, SEPARATES, BLENDS, DRIES, COOLS**
(Combines processing with conveying)
- **WIDTHS FROM 6" TO 48"; LENGTHS FROM 5' ON UP**
(With pans 16 gauge to 1/2" plate or heavier, open or enclosed)
- **BALANCED, VIBRATION-FREE UNITS AVAILABLE**
(For use on ceilings or light floor construction)

CARRIER NATURAL-FREQUENCY CONVEYORS

Carrier Natural-Frequency Conveyors work on a unique, patented vibrating principle which permits them to handle many materials that are too "tough" for most screw, belt, apron, vibrating and other conventional types of conveyors. These spectacular new conveyors also substitute the natural resonance action of coil springs for brute force. Result—a tremendous reduction in power . . . far less wear-and-tear . . . and an absolute minimum of maintenance and down-time!

Carrier Natural-Frequency Conveyors — including vertical vibrating spiral types — are now racking up amazing conveying records for scores of America's biggest, most successful industrials. Let us prove to you that they will move *your* product more quickly, efficiently and economically. Mail the coupon — no obligation of course!

Carrier Conveyor Corporation (formerly Whitley-Carrier Co.)
Frankfort Avenue at Clifton, Louisville 6, Kentucky

Gentlemen:

Without obligation, please send me Carrier Natural-Frequency Conveyor Bulletin No. 121.

Firm _____

Street _____

City _____ State _____

Att. Mr. _____ Dept. _____

When inquiring check CP 4066 on handy form, pgs. 2-3

**YOU CAN HAVE AN ANTI-CORROSION
RUBBER COVERING DEPARTMENT
RIGHT IN YOUR OWN PLANT!**



**ARco Rubber Lining on
your Chemical Equipment
will Increase Protection
and Reduce Down-time!**

• ARco offers every rubber lining and covering facility in completely equipped plants at Detroit and Houston. If your chemical equipment cannot be moved and processed, ARco Field Service Units will come to you anywhere in the country. They will bring their skill and the best protective materials known to your locality. Each ARco Field Service Unit is staffed with experienced craftsmen and supervisors. Their thorough knowledge of this specialized work is your assurance of complete satisfaction:

Let ARco Engineers advise you on your corrosion problems. Field estimates made on request.

**SEND FOR THIS INFORMATION
TODAY!** Literature showing ARco
rubber applications to equipment,
parts and installations in every
industrial field.



LICENSED SARAN APPLICATORS

AUTOMOTIVE RUBBER CO., INC.
12568 BEECH ROAD AT P.M.R.R. • DETROIT 28, MICHIGAN

ARCO RUBBER PROCESSORS
4933 HOMESTEAD ROAD • HOUSTON, TEXAS

ANYTHING CAN BE COVERED
WITH RUBBER—BY ARco

MANUFACTURERS • DESIGNERS • ENGINEERS

When inquiring check CP 4067 on handy form, pgs. 2-3

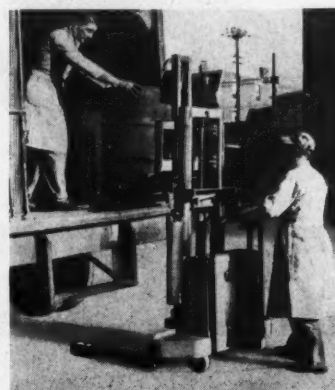
MATERIAL HANDLING

**All-purpose hand truck
takes stacking jobs
in its stride**

Uses: As an all-purpose hand truck, unit can be used for handling pallets, skids, dies, drums, barrels, sacked goods and for other non-routine jobs.

Features: Unit can stack in 5' aisles and with no trailing wires.

Description: Hydrolift Model HHL straddle-type stacker handles 2000 lb loads with four-wheel stability. Light weight and maneuverability allow easy



Stacks in a 5-foot aisle

stacking with the hydraulic unit inside railroad cars or motor trucks.

(Development of Lift Trucks, Inc., Dept. CP, Cincinnati 14, Ohio . . . or for more information check CP 4068 on handy Reader Service slip between pages 2 and 3.)

**New line of sprocket wheels
detailed in 16 pages**

Manufacturer's new line of roller chain sprocket wheels with taper lock bushings for rapid installation is described in 16-page illustrated booklet. Wheels are of stock sizes; tapered bushings are available from manufacturer in wide range of bores.

Booklet 2449 is issued by the Link-Belt Co., Dept. CP, 307 N. Michigan Ave., Chicago 1, Ill. When inquiring specify CP 4069 on handy form, pages 2 and 3.



**Shovel loader—more efficient
BULK HANDLING
for only \$2332**

Prices for 3/4 yard
Shovel loader start at
\$2332 (f.o.b. factory)
for complete unit in-
cluding tractor.

This versatile low-cost handling and maintenance tool does so many things so efficiently that practically every industrial plant will find it a profitable investment.

- It will handle bulk material.
- It will stockpile, charge hoppers, and load trucks.
- It will do grading, landscaping, backfilling or yard clean-up work.
- It will carry coal to power station and haul away ashes.
- It can handle heavy loads of loose castings or other parts.
- It will remove snow from storage yard, parking lot, driveways and sidewalks.

The Lull Shovel loader will out-perform similar units that cost much more. Features include greater forward reach, higher lift, power down-crowd, full hydraulic control of bucket, sturdy bridge type construction. Bulldozers, cranes, snow-buckets, forks or sweeper attachments are easily added.

Bulletin AD-32-B or contact
your Lull distributor for com-
plete information.

THE BAKER-LULL CORPORATION
Formerly the Lull Manufacturing Company
315 WEST 90th STREET • MINNEAPOLIS 20, MINN.
A subsidiary of the Baker-Bauhaus Co. • Cleveland 2, Ohio

**Baker
Lull**
handling equipment

When inquiring check CP 4070 on handy form, pgs. 2-3

LOGAN AIR AND HYDRAULIC POWER

SPEEDS • COORDINATES • REFINES PRODUCTION
IN OVER 10,000 INDUSTRIAL PLANTS

Logan

HYDRAULIC CONTROL VALVES

A broad range of types and sizes
to meet any requirements.

LOGAN ADVANTAGES . . .

- Ease of Installation
- Effortless Operation
- Long-Life Construction
- Unrestricted Porting
- Easy to Service
- Infrequent Maintenance

LOGAN MANUFACTURES 6,975 STANDARD CATALOGED ITEMS • CATALOG ON REQUEST

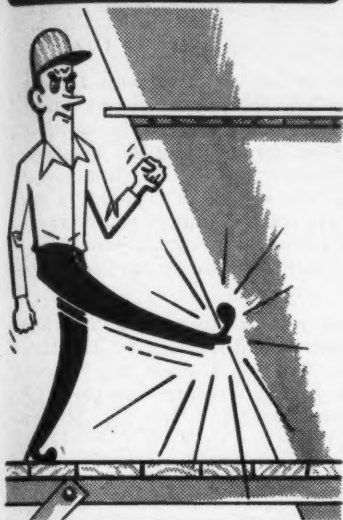
Let Logan Engineers help you design your Air and Hydraulic Circuits.

LOGANSPORT MACHINE CO., INC.
835 Center Avenue Loganport, Indiana

When inquiring check CP 4071 on handy form, pgs. 2-3

CHEMICAL PROCESSING

BIN STUCK LATELY?



There's a better way of loosening up those bins . . . with a CLEVELAND air vibrator. It'll save on your shoe leather, your handling devices and your production time. Chemical processors everywhere are using them to keep their materials moving swiftly and smoothly.



There's a size and type Cleveland air vibrator, quiet or standard, for your needs.

Write for our new catalog No. 109



2706 Clinton Ave. • Cleveland 13, Ohio

When inquiring check CP 4072 on handy form, pgs. 2-3

Boxcar Unloading

(Continued from page 83)

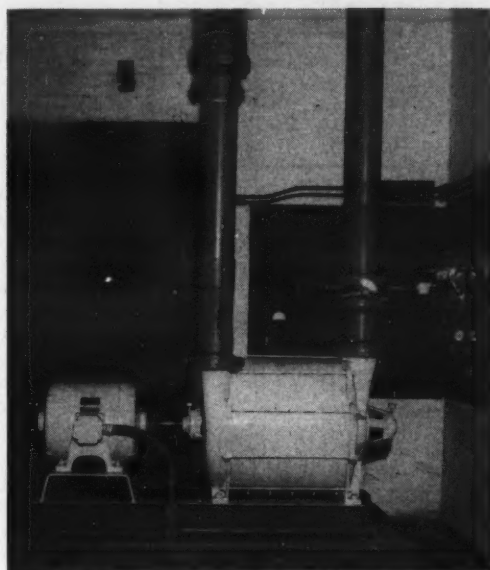


Fig 5 Blower and 25 hp motor which produces vacuum for pneumatic system

directly from the secondary separator down to an exhaustor on the ground floor.

Next operation is in moving material from bottom of silo into the day bin. Here, an Omega belt-type gravimetric feeder (Fig 3) introduces pebbled lime into the water softening device. The vacuum feeder is attached to an Omega valve at bottom of a cone under the silo (Fig 4), the valve being of a drum-type which is adjustable to amount of material feeding into the vacuum feeder. Material is dropped into a section of pipe approximately 7" from end where air enters. In so doing, air is mixed with material as it drops into 4" pipe and is conveyed to the 12 cu ft capacity primary separator on roof of main water plant building.

Primary separator takes out approximately 95 per cent of material from the air stream while remaining fine dust is conveyed to secondary separators where it is removed by filter bags. The air then returns to the exhaustor on ground floor.

When primary separator is filled with material (which takes about 3 min) Omega valve in bottom of silo is turned off and line is allowed to clear, and the air is then also turned off. A slide valve on bottom of primary separator is then opened and material drops into day bin on second floor to the Omega feeder, mixed with water and introduced into the water supply.

Blower (Fig 5) for supplying vacuum to the system is rated at 8" mercury at 830 cfm, is powered by 25 hp motor. Table below shows comparative costs and savings received from new system of handling the pebbled lime:

(Continued on next page)

Want to Keep Up to Date On ALVEY CONVEYOR SYSTEMS



If you are the man who has the responsibility for solving materials handling problems in your company, you should be informed about Alvey Package Conveyor Systems. You are sure to benefit from the broad knowledge and wide range of experience of Alvey engineers.

If you have a problem right now, we'll be glad to work with your technical staff toward developing the best solution. If you want material for future reference, write today, giving us your name and title. We'll be glad to send you information — from time to time — no obligation, of course.

Engineered Package Handling Systems

Everytime YOU

MANHANDLE A PACKAGE YOU ADD TO THE COST OF YOUR PRODUCT



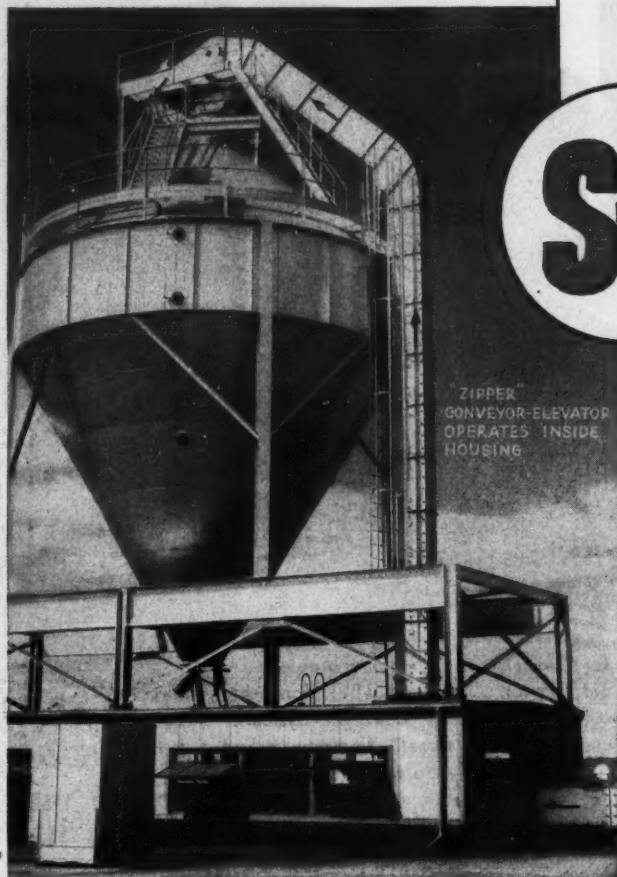
St. Louis

CONVEYORS

ALVEY CONVEYOR MFG. CO.
9308 Olive St., Rd. St. Louis 24, Mo.
Branch Offices in Principal Cities

When inquiring check CP 4073 on handy form, pgs. 2-3

Section through endless "ZIPPER" belt shows how load is completely enclosed and protected. Fragile carbon pellets are not crushed or packed. Dust can't get out—contamination can't get in. For return, "ZIPPER" belt opens up and flattens out around bend pulleys. In this installation, belt returns within steel housing.



ZIPPER
CONVEYOR-ELEVATOR
OPERATES INSIDE
HOUSING

Carrying ¼-inch pellets at a speed of 200 F.P.M., S-A "ZIPPER" conveyor loads 9½ tons of carbon black per hour into three compartment bin. The "black" is moved a total of 137 feet horizontally and 70 feet vertically. From the bin, the carbon black is discharged into a 500 lb. capacity weigh hopper and blender. "Twistite" valves control flow of pellets from the hopper.

REDLER Conveyor-Elevators
ZIPPER Conveyor-Elevators
Vibrating Conveyors
Belt Conveyors
Screw Conveyors
Bucket Elevators
Pan Conveyors & Feeders
Circular Bin Dischargers

Centrifugal Loaders & Piers
TELLEVEL Bin Level Controls
Ship Loaders & Unloaders
Storage & Reclaiming Systems
Box Car Loaders & Unloaders
Bin Gates, All Types
SEALMASTER Ball Bearing Units

S-A CONVEYING System

moves chemicals with
LESS H.P.,
LESS DUST,
LESS JAMMING

Carbon black pellets, zipped up in a dust-tight flexible "tube" moving inside a steel housing, are carried to storage by this S-A conveying system. Although extremely fragile, the pellets are transported so gently that there is no crushing, packing or jamming. This allows motors to run smoothly with uniform current drain. Less horsepower is required than with conventional conveyors of equal capacity.

Conveying systems like this are part of the reservoir of over 50 years experience S-A engineers draw upon when they plan your conveying system. Because S-A manufactures a complete line of conveying equipment, you can be sure of getting unbiased advice about the units that will move your material at the lowest cost per ton. Put this complete service to work on your chemical handling problem—write for a free survey by an S-A engineer.

STEPHEN S-ADAMSON

11 Ridgeway Avenue, Aurora, Illinois MFG. CO. Los Angeles, Calif., Belleville, Ontario

DESIGNERS AND MANUFACTURERS OF ALL TYPES OF BULK MATERIALS HANDLING EQUIPMENT

When inquiring check CP 4074 on handy form, pgs. 2-3

MATERIAL HANDLING

(Continued from preceding page)

Operation or item	Old	New
Labor per ton unloading	\$2.14	\$0.30
Labor hr (@ \$2.75/hr)	26.5 hr	8 hr
Transportation cost per ton	\$7.00	\$5.64
Lime cost per ton	\$15.50	\$11.50
	(bags)	(bulk)
Total cost per ton	\$24.64	\$17.44

With the present system, this represents a saving of \$7.20 per ton. At the present annual rate of 300-450 tons, this amounts to a yearly saving of \$2160-\$4050. Total cost including silo and pneumatic conveyor system was 11,025. Running at 25 per cent capacity, system is expected to pay for itself within five years. (Above figures do not include depreciation or a cost comparison of handling material from silo or storage area into water system.)

(Basic equipment for the pneumatic conveying system was engineered and supplied by The Lamson Corp., Dept. CP, 303 Lamson St., Syracuse 1, N.Y. . . . or for more information check CP 4075 on convenient Reader Service slip between pages two and three.)

Travel speed of 6.5 mph, free lift of 58" are features of 2-ton capacity lift truck . . .

with 79" turning radius, unit stacks 36" loads at right angles in 10.5' aisles

Uses: For general in-and-around plant materials handling requiring use of two-ton fork lift truck.

Features: Forks on unit have free lift of 58", a total elevation of 130 inches. Travel speed is 6.5 mph. With outside turning radius of 79", truck is able to right-angle stack 36" long loads in 10½ foot aisles.

Description: Chassis weight of 4000-lb capacity Yak sit-down fork truck (Model 430) is 7925 lb. Unit's 3-to-1 low pressure hoist system employs a single, simple-acting hoist cylinder and balanced cross suspension. Other advantages of the truck as reported by manufacturer are: self-energized brakes, universal-joint-connected drive motor for quick and easy detachment; seat-actuated Timken duo-grip mechanical parking brake operating on an intermediate shaft extension, and detachable drive wheel rim and tire assembly for quick changing.

Four-speed magnetic contactor travel control permits foot-actuated timed acceleration and con-

For more information on product advertised at right, specify CP-4076 . . . see information request blank between pages 2 and 3.

A NEW ADVERTISING MEDIUM...

Another RHEEM FIRST!

Rheemcote Poster Drums
beautifully lithographed in multi-colors
for ROHM and HAAS

This colorful 30-gallon steel shipping container, designed by Rohm & Haas for Dithane, an agricultural fungicide, was produced by Rheem on the world's largest metal decorating presses. This is the first large steel container printed by four-color process lithography.

This drum does double duty! It serves both as a sturdy shipping container and as an attractive display.

Rheemcote poster drums can be lithographed with any design in any number of colors to provide powerful advertising, plus family identification for all your containers, large or small.

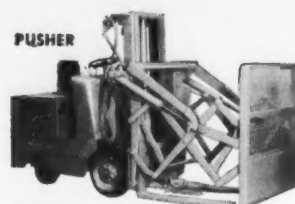
For more information, write—
Rheem Manufacturing Company,
General Sales Offices, 570 Lexington Ave., New York 22, N. Y.

RHEEM

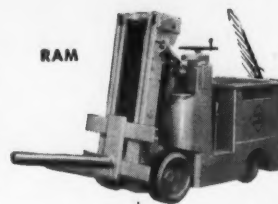
World's Largest Manufacturer
of Steel Shipping Containers



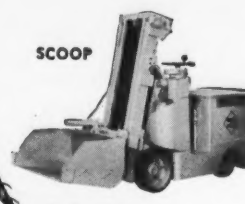
Rheem Manufacturing Plants in 22 Cities Around the World



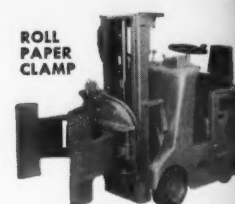
PUSHER



RAM



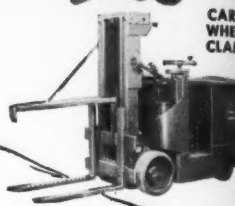
SCOOP



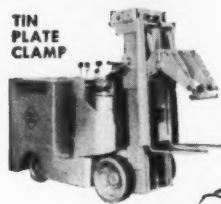
ROLL
PAPER
CLAMP



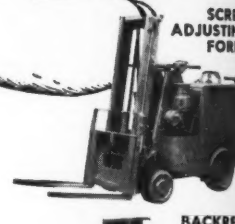
BOOM &
HOOK



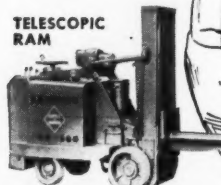
CAR
WHEEL
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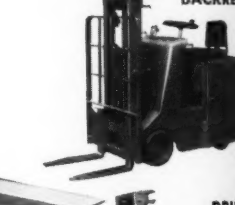
TIN
PLATE
CLAMP



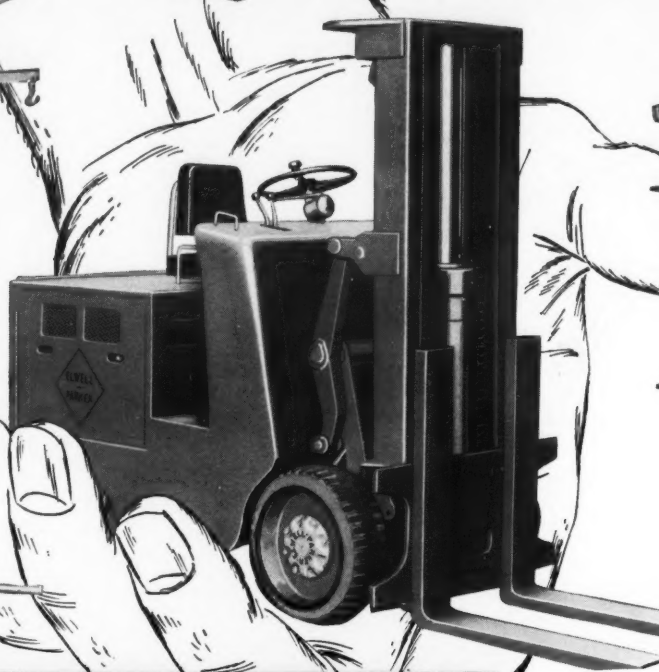
SCREW
ADJUSTING
FORKS



TELESCOPIC
RAM



BACKREST



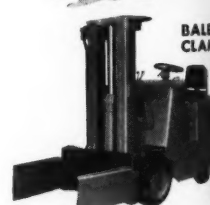
GIANT WITH 19 HANDS



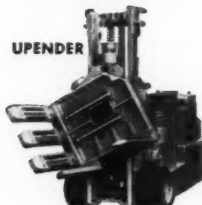
REMOTE
CONTROL
LIFT



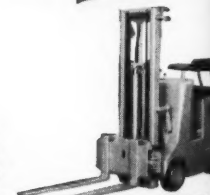
DRUM
GRAB



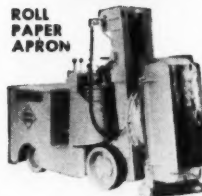
BALE
CLAMP



UPENDER



SIDE
SHIFTER



ROLL
PAPER
APRON



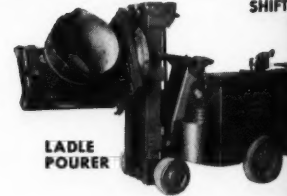
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FORK
EXTENSIONS



REVOLVING FORKS



LADLE
POURER

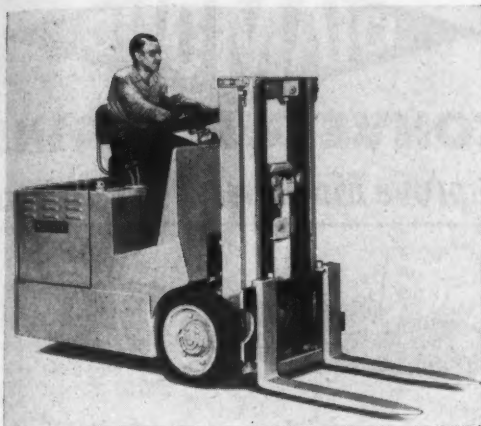
One Elwell-Parker gives you the strength of a giant—more muscle power than 10 men. And giants' hands could not be more dextrous than the ingenious fork truck with attachments illustrated. They are a product of Elwell-Parker's 45 years' experience, gained while solving scores of unusual handling problems. Truly, Elwell-Parkers can be made to do almost anything but think—our engineers do that! The Elwell-Parker Electric Company, 4018 St. Clair Avenue, Cleveland 3, Ohio.

ELWELL-PARKER

POWER INDUSTRIAL TRUCKS

Established 1893

When inquiring check CP 4077 on handy form, pgs. 2-3



Free lift is 58", travels 6.5 mph

trolled plugging of the drive motor. Operator protection is provided by the dash in the truck's frame. Built-in step well designed for easier mounting and dismounting.

(Development of the Mercury Manufacturing Co., Dept. CP, 4044 S. Halsted St., Chicago, Ill. . . . or for more information check CP 4078 on handy form, pages 2 and 3.)

Shifting of bagged loads in transit cut with new carliner . . .

locking material allows freight shipments to "ride" with rail shock, minimizes abrasion

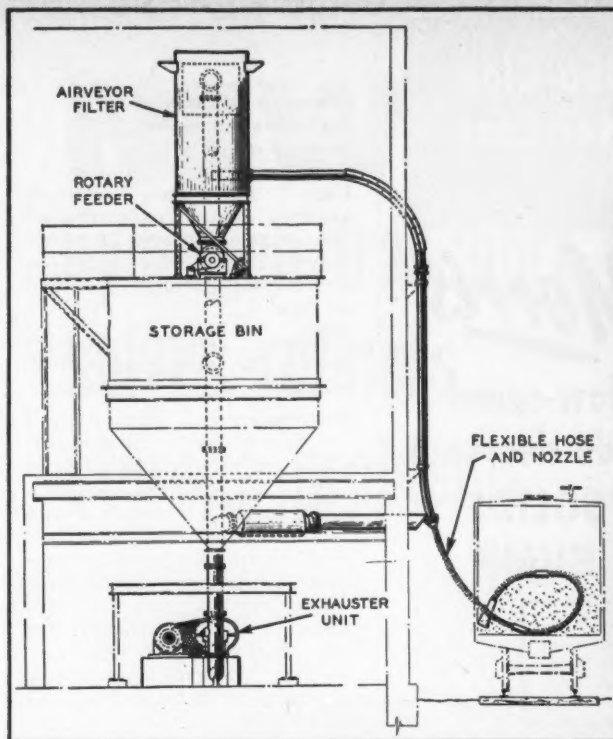
Uses: As a carliner specially designed for protecting bags of chemicals, fertilizers, feed, etc, when shipped in railroad cars.

Features: With special "locking" action of material, normal shifting of bagged loads is minimized, thus reducing danger of split or torn bags which results from abrasion along floor as well as along a one-inch belt on the sides near the bottom.

Description: With new corrugated material, nothing can rub against the load, such as the floor and sides of the car, since the material expands and contracts as the load shifts. Material stretches to conform to uneven floors. Even the most abrasive floors have no ill effects on it, manufacturer reports.

Designed to take abuse from loading trucks, the carliner is available in a variety of convenient roll widths. It also comes in an extra-lightweight grade and as unbacked material. One of the newest grades is a Wet Wax carliner for protecting delicate shipments such as carbon black.

(Carliner described is a development of the Chipewa Paper Products Company, Inc., Department CP, 2425 South Rockwell Street, Chicago 8, Illinois . . . or for more information about this product, reader may simply check CP 4079 on handy Reader Service slip between pages 2 and 3.)



Airveyor installation for handling pebble lime in a large steel mill, unloading from cars at rate of 7½ tons an hour.

AIRVEYOR

keeps your handling costs

down

Conveying dry, pulverized and granular materials such as lime, soda ash, flour, sugar, clays, borax, cellulose acetate, magnesium, and numerous other materials with the Airveyor offers many definite savings you cannot afford to overlook . . . lower cost of bulk over bagged materials . . . lower cost of unloading, storing, and in-plant rehandling of such materials. These advantages are yours, plus clean and dustless operation, minimum labor and convenience in reclaiming from storage for delivery to process . . . with the Airveyor.

If your problem involves bulk handling of dry pulverized and granular materials, call on Fuller's 26 years of specialized experience. You can save time and money by calling Fuller . . . get in touch with us, while your plans are in the formative stage.

FULLER COMPANY, Catesauque, Pa.
Chicago 3—120 So. LaSalle St.
San Francisco 4—420 Chancery Bldg.



Write for Bulletin G-1

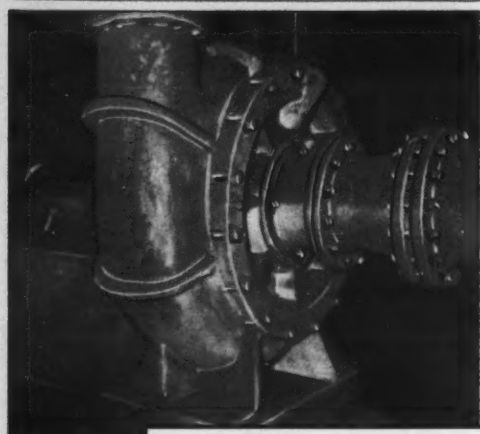
Fuller

DRY MATERIAL CONVEYING SYSTEMS AND COOLERS .
COMPRESSORS AND VACUUM PUMPS .
FEEDERS AND ASSOCIATED EQUIPMENT

A-153
1813

When inquiring check CP 4080 on handy form, pgs. 2-3

Continuous Low-Wear Non-Clog Solids Pumping... At Lower Cost



Morris low-speed wide-clearance **SOLIDS PUMP**

Actual working installation of a low-speed, wide-clearance Morris Solids Pump which handles fine solids at a rate of 6,000 gpm at 52' total head. Pump speed only 370 rpm, 14" suction opening, 12" discharge.

Where total heads do not exceed about 120 feet, low-speed, wide-clearance Morris Type-M Solids Pumps will handle solids ranging from fine abrasives up to pieces 11" in diameter. The low-speed reduces the abrasive action of the smaller particles, the large clearance allows larger solids and "tramp" pieces to pass without trouble.

Longer Wear, Easier Maintenance

Designed so that the most important wearing parts receive the least wear, initial high mechanical and hydraulic efficiencies are maintained throughout the longer service period of the pump. Double-thick wearing parts are sub-divided and protected so that the greatest erosion is taken by easily replaced segments. That means speedy, easy renewal, less down-time and lower maintenance cost.

Free Consultation

Morris engineers are always available to discuss and study your pumping problems with you. Describe your needs in a letter—or call your nearest Morris office. Our recommendations are free—entail no obligation. Write for Bulletin 175 which describes the Type M Solids Pump in detail.

MORRIS MACHINE WORKS
Baldwinsville, N. Y.
Sales Offices in Principal Cities

MORRIS Centrifugal Pumps

When inquiring check CP 4081 on handy form, pgs. 2-3

MATERIAL HANDLING

Lift truck line designed for maneuverability in close areas

Uses: For heavy materials handling in yards or warehouses where space is tight, or where heavy vehicles must work on rutted roads, through mud, sand or snow.

Features: Claimed advantages are a 12' 2" turning radius, 106" wheelbase.

Description: Manufacturer's "S" line of heavy-duty fork lift trucks are made in capacities of 4, 5, 6, 7½ and 8 tons. Counteractive weight distribution assures "perfect" balance over roughest roads, regardless of load-size variations. Fifty-four per cent of the weight remains over the front wheels, while the stationary load axle absorbs all the dead load weight. Hydropower steering gear is used exclusively on the series.

(Development of the Gerlinger Carrier Co., Dept. CP, Dallas, Ore. . . . or for more information check CP 4082 on handy form, pages 2 and 3.)

Shows central lub system for fork truck

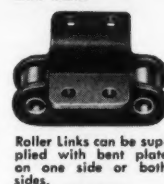
Four-page illustrated bulletin describes advantages of Alemite Accumeter centralized lubrication system as applied to manufacturer's Yak Model 430 fork lift truck.

Photos show how new lubrication method supplies fresh, cleanly-strained lubricant from inlet block. Text and schematic drawing illustrate lubricant flow through branch lines to measuring valves located at each bearing. These valves measure exact amount of lubricant needed, with accuracies down to .005 cubic inch. By comparison, other photos are included to show more conventional methods of lubrication in other types of fork trucks.

Bul 34-13 is issued by Mercury Mfg. Co., Dept. CP, 4044 S. Halsted St., Chicago 9, Ill. When inquiring specify CP 4083 on handy form, pages 2 and 3.



CONVEYOR CHAINS Improve Machinery Performance



● Diamond Conveyor Chains are manufactured to the same high standards as Diamond Roller Chains. Uniformity of quality — high tensile strengths — and the wear-resisting properties of the hardened pin bushings and rollers result in longer-life performance, and steady maximum output.

A wide selection of pitches, chain designs, and attachments are available for materials handling operations — packaging, boxing, labeling, wrapping — and for timing and control mechanisms.

Conveyor Chains & Sprocket Bulletin 29, gives complete information, illustrations and useful data. Copy will be mailed on request.

DIAMOND CHAIN COMPANY, Inc.

Dept. 411, 402 Kentucky Avenue, Indianapolis 7, Indiana
Offices and Distributors in All Principal Cities
Refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER
BETTER CHAINS MAKE BETTER MACHINES



When inquiring check CP 4084 on handy form, pgs. 2-3

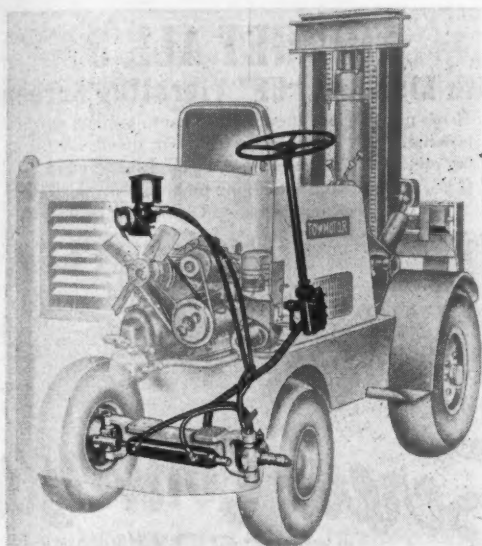
CHEMICAL PROCESSING

MATERIAL HANDLING

Easier, surer lift truck control is accomplished through power steering . . .

turns from sharp-right to sharp-left can be done in 5 sec and with 80 per cent less effort

Designed for use on manufacturer's line of fork lift trucks, powered steering permits quick and easy turning at low speeds with firm's pneumatic and solid tired units. A full turn of the wheels from



Steering effort reduced by 80 per cent

extreme right to sharp-left can be made in 5 sec, with steering effort reduced by 80 per cent, manufacturer claims. Feature results in 1) reduced shock and driver fatigue; 2) lessened wear and tear on the steering gear and drag link.

(Development of Towmotor Corp., Dept. CP, 1226 East 152nd St., Cleveland, Ohio . . . or for more information check CP 4085 on handy form, pages 2 and 3.)

Gives engineering data, mechanics of tubular conveyors

Bulletin showing engineering and mechanical details of manufacturer's tubular conveyors has recently been released. Also described are various types of conveyor drive mechanisms, roller turns, and a vibrator which assures positive discharge of conveyed materials. Nine typical tubular conveyor layouts for conveying almost any flowable material through any plane or angle are also illustrated.

Bul HEM113 is issued by Hapman Conveyors, Inc., Div. of Hapman-Dutton Co., Dept. CP, 630 Gibson St., Kalamazoo, Mich. When inquiring specify CP 4086 on handy form, pages 2 and 3.

NEW

hydrogen transport solves refiners' storage problems



Semi-trailer Mounts 30 or 38 Tubes for Mobile, Compact, High Pressure Hydrogen Storage

In response to hydrogen storage problems faced by new platforming process plants, Taylor-Wharton offers two kinds of high pressure cylinder installations, the permanent and the transport, now successfully used in the chemical industry.

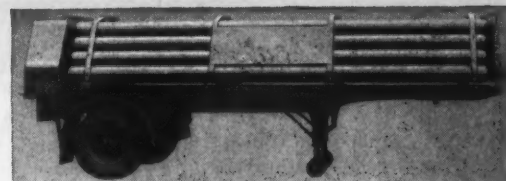
Investigation of high pressure equipment will reveal the economy of this method of storage. (Low pressure storage requires an expensive compressor.) The tubes readily provide a flexible supply of hydrogen to get you "on stream" quickly. High pressure storage saves space, packing up to 50,000 cubic feet of hydrogen at 2400 psi in the transport.

Write now for Bulletin 200 which will show you the economy of Taylor-Wharton cylinders for your hydrogen plant.

TAYLOR-WHARTON IRON & STEEL COMPANY

CINCINNATI 12, OHIO

Also Manufacturers of: Manganese Steel Castings, Alloy and Carbon Steel Castings, Special Trackwork, Gas Cylinders
When inquiring check CP 4087 on handy form, pgs. 2-3

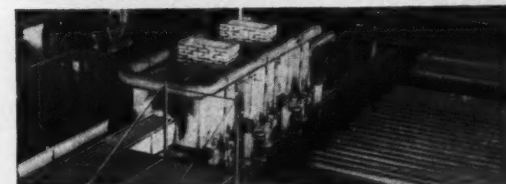


Semi-trailer with 30 or 38 tubes is delivered to point of usage. Capacity of 30 tube unit is 39,000 cu. ft. at 2400 psi; of 38 tube unit, 50,000 cu. ft. at 2400 psi.



Taylor-Wharton can also furnish individual storage cylinders, made to ICC 3A2400 classification and qualifying under API-ASME for 1450 psi.

Taylor-Wharton high pressure transports efficiently store and deliver for Allied Chemical & Dye Corporation. High storage capacity and mobility will save handling dollars and floor storage space for you too.



Modern heat treating facilities for tubes at Taylor-Wharton Iron and Steel Company.



EXCLUSIVE!

**THE HEART OF
THE HYDROELECTRIC**

This sturdy Dyna-Dual Power Unit out performs all others for ease of operation—dependability—lowest maintenance cost and economy of power.



outlasts all others 4 to 1

HYDROELECTRIC with exclusive Dyna-Dual Power Unit gives 4 times longer operating life—plus 75% lower maintenance expense—making it your best investment for material moving.

HYDROELECTRIC also brings you all these SUPERIOR functional features: Twin driving wheels • Braking at any handle position • Heavy Duty Motor, vertically mounted • 50% Easier steering • Shorter overall length • Unmatched stability • Frictionless bearings • Larger drive and trail wheels • Completely sealed differential transmission • Outstanding accessibility and ease of operation. HYDROELECTRICS will keep rolling and moving your materials at lower costs than any truck in its class.

Want proof? Complete facts and data on request.

Over 1071 different types, sizes and models—there is one for every need.



LIFT TRUCKS
INCORPORATED

2423-31 SPRING GROVE AVE.
CINCINNATI 14, OHIO

When inquiring check CP 4088 on handy form, pgs. 2-3

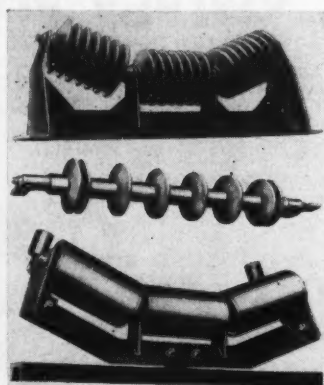
MATERIAL HANDLING

Three new conveyor idlers announced for 24, 30, and 36" units . . .

self-cleaning, self-aligning troughing styles offered

Three new items of conveyor idlers (Mesabi type impact, self-cleaning return, and self-aligning troughing) have been announced. All are available for 24, 30, 36" conveyors.

In the Mesabi type impact idlers, (See top illustration) designed to absorb the shock of falling material, flexibility of the segments, permits



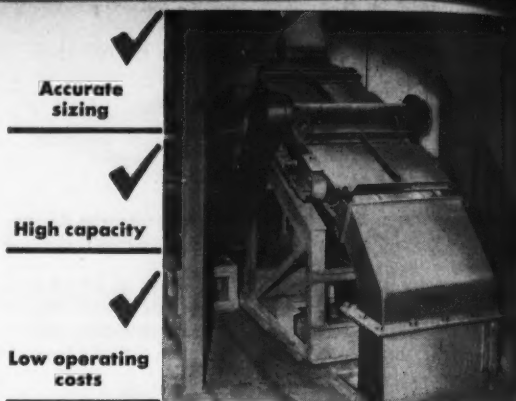
the belt to run smoothly over the idlers, even though the material may not be evenly distributed on the roll. Trough of left and right-hand rolls is 22°.

Self-cleaning return idlers (Center illustration) are of single roll construction and, like the impact type described, are equipped with Good-year rubber roll segments, but with 6 1/4" diam, 1 1/8" wide, 2 1/4" bore. Two of the segments are mounted side by side on each end of the roll.

Two features listed for the new 6" diam self-aligning troughing idlers (Bottom illustration) are: 1) mounting of the idler frame on a pivoted base, and 2) mounting of the guide rollers on each end of the set of troughing idlers.

When material on belt is unbalanced, self-alignment of idlers is assured because they swing freely on pivoted base, and guide rollers hold the conveyor belt in line.

(Development of Pioneer Engineering Works, Subsidiary of Poor & Co., Dept. CP, 1515 Central Ave., Minneapolis 13, Minn. . . or check CP 4089, pages 2 and 3.)



**YOU GET ALL 3
with Link-Belt "UP" Vibrating Screens**

Here's new economy in screening light to medium weight materials. "UP" Vibrating Screens, with simple two-bearing operation, provide positive, high-frequency vibration. If you're faced with a screening problem, call your Link-Belt representative. Or write for Book 2577.



**LINK-BELT
VIBRATING SCREENS**

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices in Principal Cities.

When inquiring check CP 4090 on handy form, pgs. 2-3

**Screw Conveyor
and ACCESSORIES—
ALL TYPES**



ALL TYPES OF CONVEYOR TROUGH with "U" Edging and "Tite-Seal" Cover Clamps

WRITE FOR CATALOG



When inquiring check CP 4091 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

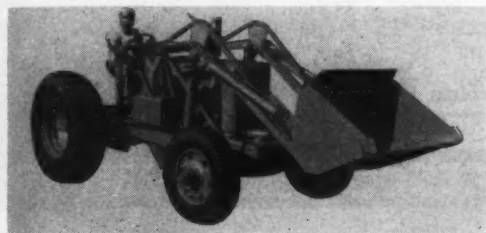
**Diesel engine gives tractor power
to lift 5000 lb load
10' distance . . .**

8-speed transmission permits full throttle operation at each job speed

Uses: When used with available attachments, unit can be used for loading, scooping, bulldozing, lifting, etc.

Features: Diesel powered, unit will crowd and dig below tractor level, lift a 5000 lb capacity load to 10' 3", dump it at 8' 6", and reach 5' 10" ahead of the tractor radiator shield. Eight-speed transmission permits full throttle operation at each job speed.

Description: Lift speed of the Shovel loader is 12 sec; lowering speed, 9 sec. Fuel pump has only one moving part. Double-acting hydraulic cylinder



Transmission has eight speeds

der enables operator to shake materials bucket thoroughly clean. Unit is engineered for clear visibility in critical loading or unloading position and all actuating parts are located well ahead of operator for safety.

Tools available include a material bucket, combination coal and snow bucket, bulldozer, lifting crane, sweeper (for snow, clearance and clean-up), rear leveling blade scarifier and logging fork.

(Development of the Baker-Lull Corp., Dept. CP, 314 W. 90th St., Minneapolis 20, Minn. . . or for more information check CP 4092, pgs. 2 & 3.)

"Floor level" equipment described in 100-page catalog

A comprehensive line of equipment for the "floor level" handling of goods and materials is presented in 100-page, pocket size catalog.

Latest edition (the 11th) contains information, illustrations and specifications on fork trucks, pallet trucks, industrial tractors, electric and hand lift trucks, steleg skids, semi-live skids and lifters, portable and industrial elevators, portable cranes, stacking frames, steel storage racks, lifting and die tables, hand trucks and specialties.

Junior Cat No. 535 is issued by Barrett-Cravens Co., Dept. CP, 4609 S. Western Blvd., Chicago 9, Ill. When inquiring specify CP 4093 on handy form, pages 2 and 3.

HOW **AJAX** LO-VEYORS do more than simply convey

Ajax Lo-Veyors provide a self-contained conveying unit ready to set in place and use. They can be installed at or below floor level or suspended from walls or ceiling. They are actuated by the Ajax-Shaler Shaker, a fully enclosed, vibrating drive unit which eliminates exposed bearings, idlers and tail pulleys. They are ideal for use under normal as well as extreme conditions involving moisture, corrosion and abrasive-laden atmospheres.

They are being used with outstanding success and economy by the Who's Who of American Industry.

Write giving complete information about your specific requirements.



Showing typical pan-type Ajax Lo-Veyor. Note extremely low head room required.



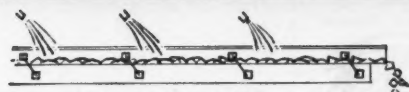
COOL WHILE CONVEYING

Water cooled pans reduce temperature of materials while being conveyed from ovens, molds, and other processing equipment



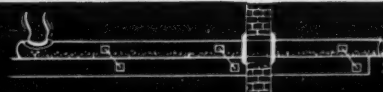
SORT WHILE CONVEYING

Well adapted for separation of various sizes and types of materials. Grates and chutes can be arranged according to requirements.



WASH WHILE CONVEYING

Waterproof pan and tubular Lo-Veyors made of standard and special materials permit use of various types of cleaning and treating solutions.



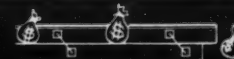
EXPLOSION-PROOF WHILE CONVEYING

Ajax closed pan and tubular Lo-Veyors are used where explosive materials are conveyed. Dust or gas-tight diaphragms convey through departmental walls.



SAFEGUARD QUALITY WHILE CONVEYING

Fragile materials such as bulk candy, popcorn and cereals, are readily conveyed with reduced losses between manufacturing operations.



CUT COSTS WHILE CONVEYING

Reduce non-productive labor costs by moving raw, semi-finished and finished materials automatically. Low first cost, low power consumption and extreme low maintenance cost.

AJAX FLEXIBLE COUPLING CO. INC. WESTFIELD, N. Y.

When inquiring check CP 4094 on handy form, pgs. 2-3

SHARP & DOHME Reports:

ERIEZ PERMANENT MAGNETIC SEPARATORS ASSURE CONSTANT INSULIN PRODUCTION



Extraction of insulin at the Philadelphia plant of Sharp & Dohme, Inc., starts with the grinding of beef pancreas glands. To prevent nails, bolts, wire and other tramp iron (see insert illustration) sometimes accumulated in packing and shipping of glands from getting into the pancreas grinder, two ERIEZ plate-type magnetic separators are suspended over the conveyor line. The Alnico V magnets remove tramp iron each day from the pancreas glands . . . prevent damage to the cone, worm and cutter of the grinder, and eliminate possible lay-off of men during machine downtime. Vital production of insulin at Sharp & Dohme is never stopped because of tramp iron inclusions!



Plate-type Separators, hinged for easy cleaning of ferrous contamination, remove tramp iron daily from beef pancreas processing line.

Eriez permanent (non-electric) plate-type magnetic separators, built in a full range of sizes for chemical processing lines, assure you that strength for strength . . . size for size . . . dollar for dollar . . . no ordinary permanent magnet compares!

Here are 5 features found only in Eriez permanent magnetic separators:

1. Protective cover prevents tampering and accumulation of iron on backs of castings with consequent shorting of magnetic circuit.
2. All units complete, for wood or steel installation . . . no adaptations required.
3. Continuous hinge means easy and lasting installation.
4. Powerful Hyflux Alnico V gives greatest possible magnetic strength.
5. Riveted construction adds rigidity . . . increases structural strength.



13 Magnet Drive • Erie, Pennsylvania

Write for FREE 16-page Catalog 15 which describes 25 different Magnetic Separators for the chemical industry.

MANUFACTURING COMPANY

"Buy Permanent Protection . . . by ERIEZ"

When inquiring check CP 4095 on handy form, pgs. 2-3

MATERIAL HANDLING

One cylinder takes over lift gate operation on trucks . . .

lifts, lowers, closes "elevator" to facilitate loading, unloading

Uses: As a freight elevator on the back of trucks.

Features: Single lever control utilizes power of single cylinder both to lift a load and to power close the gate. Simplicity eliminates one or more extra cylinders, valves, and a host of parts.

Description: Model 146 Lift Gate has up to 4000 lb capacity; also available in 2000 lb capacity. Has a safety control which stops



Lever controls up and down movement of gate

gate instantly upon operator removing hand from control lever. Other models available are Model 145 which starts at a lifting capacity of 2000 lb and the Model EB 1-801 for pick-up trucks.

(Development of the Anthony Company, Dept. CP, Streator, Ill. . . . or for more information check CP 4096 on handy form, pages 2 and 3.)

Torque features for crane are presented

Application of torque converter to manufacturer's one-man Aero-Crane is described in 16-page illustrated bulletin. Torque feature eliminates slip-clutching and jerking to start heavy loads and racing of engine when there is

Save time! Prevent accidents!

LIFT AND DUMP

MECHANICALLY

BAGS
BARRELS
DRUMS
BOXES

REDUCE HANDLING COSTS with a CESCO Dumper. It handles up to 100 loads per hour; has a lifting cap. ranging from 100 to 1500 lbs. Both single- and multi-purpose portable models are built in standard dumping heights from 5 to 12 ft. Stationary models up to 16 ft. dumping heights. Push button controlled. Write for catalog.

ESSEX CONVEYOR, INC.
101 Colden Street • Newark, New Jersey
COLSON EQUIPMENT & SUPPLY CO.
1317 Willow Street • Los Angeles 13, California

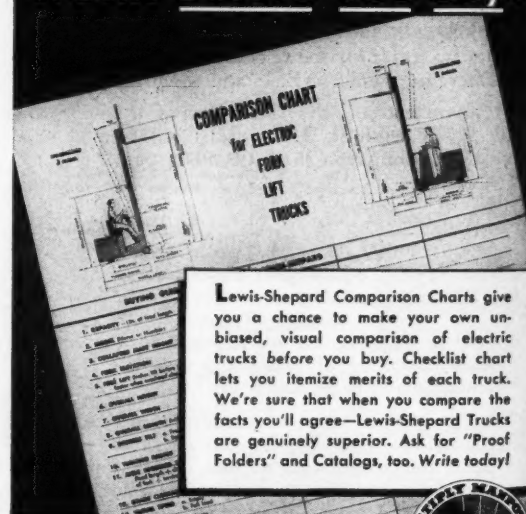


WRITE
FOR
CATALOG

CESCO SKIP HOIST DUMPER

When inquiring check CP 4097 on handy form, pgs. 2-3

NOW! Compare Electric Trucks Before You Buy!



Lewis-Shepard Comparison Charts give you a chance to make your own unbiased, visual comparison of electric trucks before you buy. Checklist chart lets you itemize merits of each truck. We're sure that when you compare the facts you'll agree—Lewis-Shepard Trucks are genuinely superior. Ask for "Proof Folders" and Catalogs, too. Write today!

LEWIS-SHEPARD
1030-10 WALNUT ST., WATERTOWN 72, MASS.

Nationwide Service — See "Trucks, Industrial" in your Yellow Phone Book



When inquiring check CP 4098 on handy form, pgs. 2-3

CHEMICAL PROCESSING

MATERIAL HANDLING

no need. Wear on gears and shafts is cut, maintenance is reduced. Specifications and capacities of the unit are included.

Bul 85 is issued by the Orton Crane & Shovel Co., Dept. CP, 608 S. Dearborn St., Chicago 5, Ill. When inquiring specify CP 4099 on handy form, pages 2 and 3.

One man can move 30 x 6' Mg ramp with ease to speed loading of yard cars . . .

lightweight unit engineered to support 13,000 lb or more per axle

Uses: For loading, unloading railroad cars or where no loading dock exists.

Features: Extreme lightness allows one man to position 30 x 6' magnesium ramp. Unit can support more than 13,000 lb per axle if required.

Description: Mobile ramp combines strength with extreme lightness of magnesium. Equipped with hydraulic lifting mechanism, ramp can be



One man can move lightweight magnesium ramp

raised to any car level quickly and easily. Safety lock mechanism anchors unit securely to the car during loading. Retractable trailer hitch permits power towing for long distance mobility.

(Development of Magline, Inc., Dept. CP, Pinconning, Mich. . . . or for more information check CP 4100 on handy form, pages 2 and 3.)

"Road-to-track" flexibility emphasized for mobile car spotter

Improved operational features of Trackmobile Model 2TM which allows switching from road to track or vice versa in 30 sec are presented in new bulletin.

In addition to picturing the gasoline-powered switcher's "road-to-track" flexibility, bulletin spotlights such advantages as electric sanders, improved road wheel drive, and steering and chain drive power for a maximum drawbar pull of 8400 lb. Also included are complete specifications.

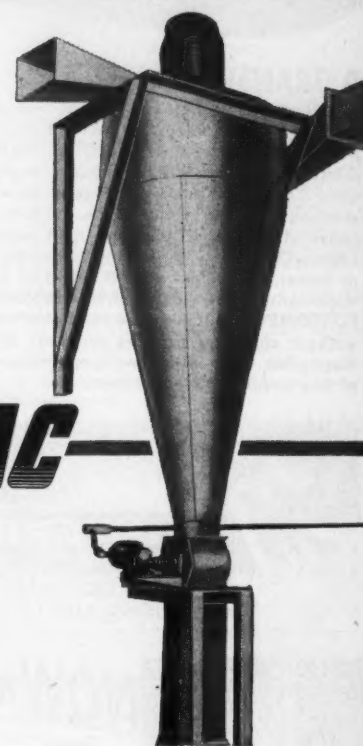
Bul T-112, "Solve Your Car Handling Problems," is issued by the Whiting Corp., Dept. CP, Harvey, Ill. When inquiring specify CP 4101, pgs. 2 & 3.

We make "PIPE DREAMS" come true

SPROUT-WALDRON
equipment and systems for

**HANDLING • MOVING • LOADING
UNLOADING BULK MATERIALS**

PNEU-VAC



Sprout-Waldron's Pneu-Vac will probably bring reality to your plant engineer's dream of truly efficient materials handling . . . because with Pneu-Vac you can convey powdered, granular and flaky materials *anywhere you can run a pipe!*

In many modern plants, Pneu-Vac (a negative pressure system) is rapidly replacing bucket elevators and screw conveyors, because it has greater flexibility, offers many savings, and eliminates contamination and infestations of insects and rodents.

One of its many advantages is its ability to convey friable materials with negligible reduction of particle size.

Specially engineered for individual processing needs, Pneu-Vac is self-cleaning and can be designed to aerate, cool and dry. It eliminates dust, reduces hazards and improves working conditions. Pneu-Vac is swift, sanitary, safe and saves time, labor, space and money!

Sprout-Waldron materials handling equipment and systems are being used today in thousands of conveying jobs in the proc-

essing and other industries. Here is what Sprout-Waldron can offer you . . .

1. *Pneu-Vac, spiral, belt and bucket conveying systems for a wide range of applications.*
2. *A broad background in solving many types of conveying problems.*
3. *Complete facilities for engineering, pilot testing and fabrication.*

Write to: Sprout-Waldron & Co., Inc.,
10 Logan Street, Muncy, Pennsylvania.



SPROUT-WALDRON

Manufacturing Engineers

M U N C Y • P E N N S Y L V A N I A

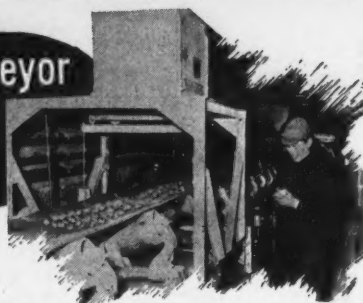
MODERN EQUIPMENT FOR: Size Reduction • Mixing and Blending • Bulk Materials Handling • Product Classification • Pelletizing & Cubing

When inquiring check CP 4102 on handy form, pgs. 2-3

Make your Belt Conveyor a **WEIGHING** Conveyor!

A TRANSPORTOMETER®

installed on your belt conveyor system continuously weighs, totalizes and records the flow of material at that point. THE ONLY TRUE INTEGRATING WEIGHER — Completely mechanical, gear differential integrator records on a direct-reading tonnage totalizer, the product of belt speed and momentary weight on the suspended idlers. Completely automatic. Accuracy 99½% or better, regardless of belt speed or tonnage variations. Easily installed. Complete TRANSPORTOMETER unit supplied ready for mounting without changing existing conveyor structure. Negligible wear with lowest maintenance cost of any comparable equipment.



*Some of the Materials
Weighed by the...*

TRANSPORTOMETER

Asbestos	Paper Pulp
Cement	Sand and Stone
Chemicals	Sewage Sludge
Coal and Coke	Soap Powders
Coffee Beans	Sugar
Flour	Sulphur
Fruits	Super Phosphate
Ores	Tobacco

Bulletin tells how the TRANSPORTOMETER can improve your processes by faster, more accurate weighing and totalizing, via belt conveyors.



TRANSPORTOMETER DIVISION **SINTERING MACHINERY CORPORATION**

150 SINTER AVENUE, NETCONG, N. J.

When inquiring check CP 4103 on handy form, pgs. 2-3

NOW moves 32 drums an hour with **ONE MAN!***

Formerly 16 Drums
an hour with
overhead crane
and 2 men....

THE **LIFT-O-MATIC** for **DRUM HANDLING**

- ✓ **Simple**... One operator can attach or remove unit, **WITHOUT TOOLS**, in only 2 minutes.
- ✓ **Automatic**... Raising or lowering truck carriage provides automatic, mechanical pick-up and release. Additional operator controls unnecessary.
- ✓ **No Pallets Needed**... Move, tie or place drums quickly without pallets.
- ✓ **FITS ANY TRUCK** * Case history on request

Write for Details **MARVEL INDUSTRIES, Inc.**
2234 CLEVELAND ST., EVANSTON, ILLINOIS

When inquiring check CP 4104 on handy form, pgs. 2-3

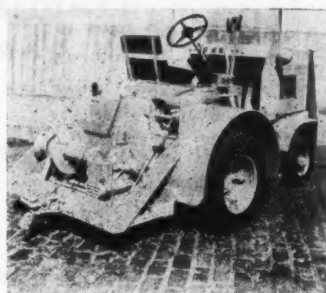
MATERIAL HANDLING

Operator need not leave tractor to control power winch...

unit is set at low elevation, has capacity of 15,000 lb

A power-driven winch assembly has been fitted to manufacturer's heavy duty "Super Huskie" six-wheeled, pneumatic tired industrial tractor and has a capacity of 15,000 lb.

To facilitate easy operation, the winch assembly is located at a low elevation on the rear of the tractor and can be operated



Capacity is rated at 15,000 lb

controlled through a specially-seated. A transmission power take-off drives the winch, which is without the operator leaving his designed linkage arrangement.

Tractor develops a 5000-lb tractive effort and weighs approximately 6500 lb. Vehicle must be anchored to make use of the ultimate winch cable pull.

(Development of the Mercury Manufacturing Co., Dept. CP, 4044 S. Halsted St., Chicago 9, Ill. . . . or for more information check CP 4105 on handy form, pages 2 and 3.)

Conveying machine provides bench space for workers

Uses: For all manufacturer's belt and live roller conveyors used as benches in assembly or inspection operations.

Features: Aprons provide bench space for workers.

Description: Variable speed drive can be furnished to suit in ranges of 4:1, and speeds from 5 fpm. Belts to meet all special

Is Iron Contamination a Problem?



PURIFY
your product with the
FRANTZ

FERROFILTER

MAGNETIC SEPARATOR

The trouble-saving, money-saving answer to your iron contamination problem is the FRANTZ FERROFILTER. It handles liquid suspensions in all viscosities, extracting the most minute magnetic particles. Available in the Electromagnetic Gravity type (as shown), Pipeline and Underfeed types. Also Dry FERROFILTERS for powdered and granular materials; and Permanent Magnet FERROFILTERS for use on coolant and lubricating oil lines of machine tools and other plant equipment.

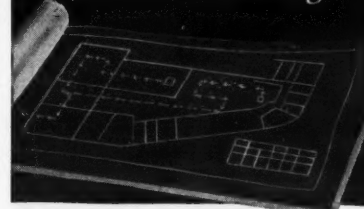
Send for Bulletin 46E

S. G. FRANTZ CO., Inc.
P.O. Box 1138, Trenton 6, N.J.

TRIAL OFFER: All models available on liberal rental plan. Write for details.

When inquiring check CP 4106 on handy form, pgs. 2-3

Take an EXTRA Profit with **Weld-Bilt** Experience in Materials Handling!



**WELD-BILT
HYDRAULIC
LIFT TRUCK.
HANDLES MORE
WORK. EASIER.
FASTER.**

One Midwest manufacturer saved \$90,000 on equipment cost alone because he called in a Weld-Bilt engineer FIRST, before deciding on expensive special-design units recommended to solve a

difficult handling problem. Our engineer, experienced in cost-saving shortcuts, showed how simple adaptation of more standard equipment could do the job even better.

This is the kind of service you can expect from WELD-BILT... a thorough analysis of your problems based on years of varied experience and wide knowledge, of handling problems... then a recommended solution that will do YOU the most good — in time and labor savings, in product protection, production speed-up — at the lowest cost. It may involve adapting standard equipment, custom-engineering new equipment — or merely realigning your present operations.

Call in the WELD-BILT Materials Handling Engineer for an economical solution to your problem today. You'll probably save money.

WEST BEND EQUIPMENT CORP.

322 Water St., West Bend, Wis.

MATERIALS HANDLING ENGINEERS

Portable Elevators • Pallet Trucks • Single Stroke Lift Trucks • Two-Wheel Trucks • Platform Trucks • Skid Platforms

When inquiring check CP 4107 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Pump liquids, gases,
solids in solution**



Just place connecting
tubes in
**NEW,
large
Sigmamotor
Pump!**

• Wavelike
action of steel
fingers forces
liquid through the

tubing. Material in tubing never touches pump.
Stops contamination and corrosion.
Excellent for handling of corrosive solution.....

\$195.00

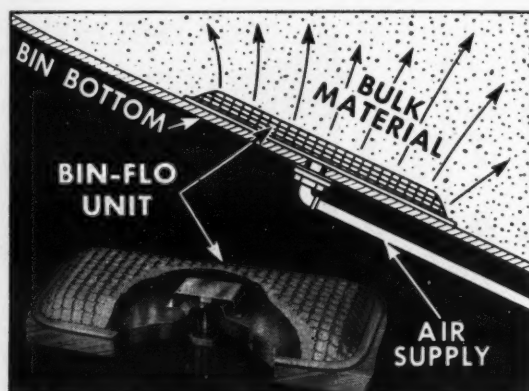
Smaller unit with capacities to 30
gallons per hour.....

\$55.00

SIGMAMOTOR Inc.

18 North Main Street • Middleport, N. Y.

When inquiring check CP 4108 on handy form, pgs. 2-3



BIN-FLO USES SMALL VOLUME
OF AIR AT LOW
PRESSURE
KEEPS BULK MATERIALS MOVING.

BIN-FLO units in bins, chutes, hoppers, etc., restore flow characteristics to dry, finely ground materials which tend to pack or bridge in storage. Types for all materials and conditions. No moving parts; simple installation; negligible operating cost; no maintenance cost.

BIN-DICATOR bin level indicator—"The Eyes of the Bin"—automatically reports levels of materials in storage; automatic controls filling machines; prevents waste.

THE BIN-DICATOR CO.

13946-D Kercheval • Detroit 15, Mich.

**NEW
20-PAGE
BOOK
FREE**

When inquiring check CP 4109 on handy form, pgs. 2-3

MATERIAL HANDLING

handling requirements are available on all power belt models.

(Development of The Metzgar Company, Dept. CP, 449 Douglas St. N. W., Grand Rapids, Mich. ... or for more information check CP 4110 on handy form, pages 2 and 3.)

Heavy products moved easily by slat conveyor...

pusher-type unit has free-turning ball-bearing rollers

Uses: For handling hot billets and heavy, bulky products.

Features: Conveyed material is pushed by bars clamped to a pair of power-driven chains which travel in side rails of conveyor frame.

Description: Pusher bars of slat conveyor are located at 48" centers, push the material over stationary, full-width roller bed.



Slats move hot, heavy products

Both ends of the roller are equipped with lifelong lubricated bearings that roll in a case-hardened raceway. Entire ball-bearing housing is pushed into the end of the roller and is held in position by a spring-lock for quick assembly and disassembly.

Free-turning, ball-bearing rollers reduce friction to a minimum, manufacturer reports. Conveyors are chain driven from a special reducer by an air-cooled motor.

(Development of The Sage Equipment Co., Dept. CP, 31 Essex St., Buffalo 13, N.Y. ... or for more information check CP 4111 on handy form, pages 2 and 3.)

STOP VIBRATION

**WITH
KORFUND
VIBRATION
CONTROL**

AND

- Install Equipment Anywhere (for better plant layout)
- Reduce Equipment Installation Cost
- Increase Production
- Reduce Maintenance
- Improve Employee Efficiency

Whether your problem is simple or complex, Korfund engineers will gladly recommend the easiest, most economical, effective solution. A half-century of experience is at your disposal. There are standard stock Korfund isolators for the majority of installations—special designs when necessary.

A selector chart is available, giving recommendations for both normal and critical conditions, for pumps, compressors, centrifuges, machine tools, presses, hammers and most other processing and mechanical equipment. Write us for your copy of Bulletin No. 12, or see our catalog in Sweet's Files.

For specific recommendations without obligation, contact us or the Korfund representative you'll find in most principal cities.



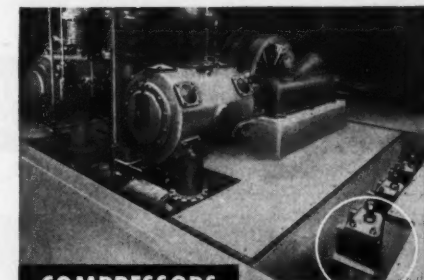
THE KORFUND CO., INC.

48-13E Thirty Second Place, Long Island City 1, N. Y.
In Canada: 510 Canal Bank, Ville St. Pierre, Montreal



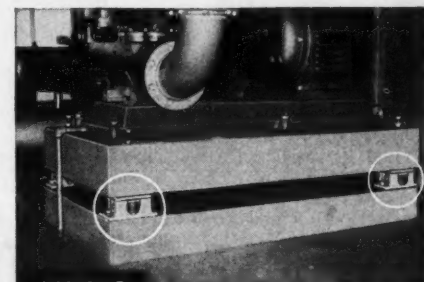
SHAKER SCREENS

Korfund Vibro-Isolators installed under these shaker screens, located on a barge, stop vibration transmission into the deck without reducing the efficiency of the shaking action which removes shale cuttings from off-shore oil drilling mud. Another application—low cost upper floor screen installation without reinforcing.



COMPRESSORS

Korfund Isolators permitted installation of five 250 H. P. duplex compressors in limited basement space actually overlapping building column footings—yet completely kept vibration from delicate bacteria cultures on upper floors of this pharmaceutical plant.



PUMPS

Korfund Vibro-Isolators installed under this large pump and its driving motor completely stop transmission of vibration and objectionable noise to floors below.

When inquiring check CP 4112 on handy form, pgs. 2-3



CHAINVEYOR
... SENSATION
of the
Philadelphia
Materials
Handling
Show!

The **NEW LOW COST**
OVERHEAD CONVEYOR
OF REVOLUTIONARY
DESIGN
FOR LOADS UP TO
60# PER FOOT

If your requirements fall within its capacity,
send for our new catalog giving complete
information.

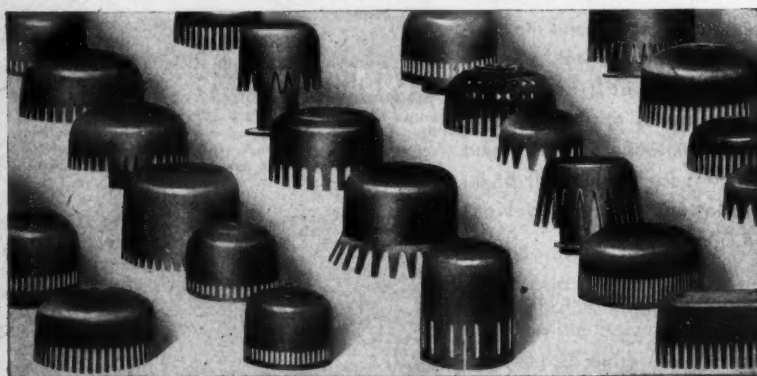
MANUFACTURED BY



UNITED STATES SPRING & BUMPER CO.

4951 Alcoa, Box 2475 Terminal Annex Los Angeles 58, California

When inquiring check CP 4113 on handy form, pgs. 2-3



SEND FOR PSC BUBBLE CAP BULLETIN 21

Largest Compilation of Engineering Data.

Lists 200 Styles Furnished Without Die Cost.

This standard reference contains complete
specification information for over 200
standard styles of bubble caps and risers.
Also drawings for use in determining
methods of tray assembly. All styles list-

ed in Bulletin 21 are furnished promptly,
without die cost, and in any alloy to meet
your coking or corrosion problems. Special
caps gladly designed; write as to your needs.

THE PRESSED STEEL CO., 709 N. Penna. Ave., Wilkes-Barre, Pa.



Custom Fabricators for the Process Industries Since 1928. Send Your Blue Prints

When inquiring check CP 4114 on handy form, pgs. 2-3

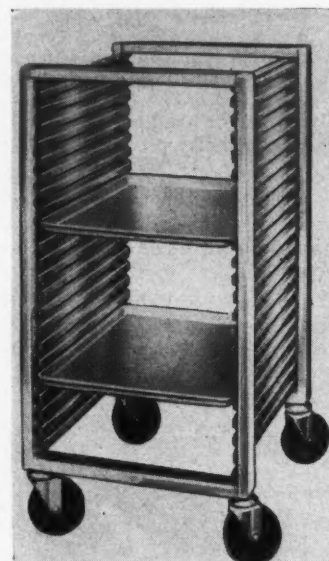
MATERIAL HANDLING

**Corrugated walls of rack
promote flexibility
for shelf needs**

Uses: For mobile shelf stor-
age of parts.

Features: Shelves can be spaced
in rack to suit parts being stored.

Description: Trays or tote
boxes act as shelves and are slid
into grooves formed by the cor-



Placement of shelves is flexible

rugated side walls. Corrugations
are on 1½" centers. Units avail-
able to handle from six to eighty-
two trays.

Racks are mounted on 5" heavy-
duty, ball-bearing casters to fa-
cilitate movement of racks. All
parts of aluminum alloy. When
specified, steel construction will
be supplied.

(Development of the Crescent
Metal Products Co., Inc., Dept.
CP, 18901 St. Clair Ave., Cleve-
land 10, Ohio. . . or for more
information check CP 4115 on
handy form, pages 2 and 3.)

**Side shifting attachment
works equally well
on forks, grabs**

Uses: For allowing lift trucks
to work in closer quarters when
grasping or positioning loads.

Features: Necessity of ma-

WHAT HAVE YOU TO SEPARATE, CLEAN, CLASSIFY?



During the last 75 years, we have developed and installed
equipment for separating, cleaning, and classifying most
of the materials used in the process industries.

The Bauer line of this type of equipment includes:
Specific Gravity Separators—Seed, Nut, and Bran Cleaners
—Oil Seed Separators (to remove hulls and other debris
from kernels)—Shakers and Aspirators—Defibrators—Pulp
Cleaners—Pulp Fiber Classifiers—Magnetic Separators.

All of them are briefly described in our Bulletin No.
52, "Bauer Machinery for the Process Industries." We also
have a comprehensive bulletin on each kind of equipment.

Our equipment is so widely used that we probably have
had experience in solving problems similar to yours.

However, if you have a unique problem, we'll be glad
to work out the answer in our research and testing labora-
tories. This service is also explained in Bulletin No. 52.

You are invited to ask for our literature as the first
step in learning what we may be able to do for you.

THE

Bauer

BROS. CO.

1728 SHERIDAN AVE.
SPRINGFIELD, OHIO

When inquiring check CP 4116 on handy form, pgs. 2-3

▶ 130"
Extreme
Lift

▶ 59½"
Free Lift

▶ 60"
Turning
Radius

**Mercury
JEEP**
MODEL 230
2000 Lb. Capacity
Tilting—Tieing

The most versatile fork
truck of 2000 lb. rating.
130" lift with ample sta-
bility...60" turning radius
plus inclined automotive
steering...foot pedal ac-
celeration...convenient
controls and many other
design advancements.
For complete details re-
quest Bulletin 205.

MERCURY MANUFACTURING COMPANY

4020 S. Halsted Street • Chicago 9, Illinois

When inquiring check CP 4117 on handy form, pgs. 2-3

CHEMICAL PROCESSING

YOU GET **STEADY FLOW**
WITH
SPO
AIR
VIBRATORS



These low-cost units provide dependable hard-hitting vibration to keep bulk granular or powdered materials moving. SPO vibrators prevent jams in bins, hoppers and chutes . . . assure steady material flow at all times . . . eliminate production bottlenecks.

Long-lasting SPO vibrators incorporate a special corrosion-proof liner for full power starting, high speed operation and low air consumption. A complete range of types and sizes is available to meet all vibration needs.

1440-02

Write today for Bulletin 50 for complete details.

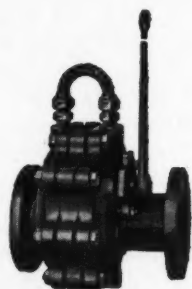


SPO INCORPORATED

6531 Grand Division Avenue • Cleveland 25, Ohio

When inquiring check CP 4118 on handy form, pgs. 2-3

**Valves That Keep
VISCOUS
MATERIALS
Flowing
Freely**



When you handle coal tar products, asphalts, resins, waxes, molten sulfur, varnish and other materials which congeal at ordinary temperatures, you won't be troubled with clogged valves if you use EVERLASTING Steam Jacketed Valves.

The ample jacket space of these valves surrounds the ports as well as the body . . .

provides extensive heating surface and correct temperature to insure fluidity. Besides, the design of the valves is quick acting . . . non-wedging . . . and self-grinding . . . and they have the straight-through flow and lasting tightness that have made EVERLASTING Valves famous for over 40 years. Write for complete information.

EVERLASTING VALVE CO., 49 Fisk Street, Jersey City 5, N. J.
Trade Mark "EVERLASTING" Reg. U. S. Pat. Off.

Everlasting Valves
for everlasting protection

When inquiring check CP 4119 on handy form, pgs. 2-3

MATERIAL HANDLING

maneuvering truck in crowded quarters is eliminated, since the unit works both as a load grab side shift and as a remote control fork positioner for aligning forks under loads.

Description: Side shifting can be accomplished with or without



Less maneuvering is main feature

load, and manual positioning of the forks is eliminated. Unit also allows stacking close to walls where overall width of truck is greater than overall width of load.

(Development of the Hyster Co., Dept. CP, 2902 N. E. Clackamas St., Portland 8, Oregon. . . or for more information about this development simply check CP 4120 on handy Reader Service slip between pages 2 and 3.)

List advantages of Mg loading ramps

Advantages of manufacturer's mobile loading ramp of all-welded magnesium construction are listed in 4-page, illustrated bulletin.

In eight models, units are 30' long, can be had in 60 or 70" width, have rated load capacities of 5000, 10,000 or 13,000 lb. Special sizes and capacities are available on request. Optional equipment includes hydraulic lifting mechanism and a retractable trailer hitch.

Bul DB-211 is issued by Mag-Line Inc., Dept. CP, Pinconning, Mich. When inquiring specify CP 4121 on handy form, pages 2 and 3.



Put "STANDARD CONVEYOR"
EXPERIENCE
to work for YOU

On processing — inspecting — packing lines with roller and belt conveyors

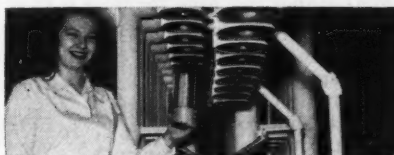
• Your needs in conveyors—ranging from power and gravity conveyors, roller, belt, slat, chain, pushbar, sectional—to portable, self-contained units—spiral chutes—pneumatic tube systems—can be best met at Standard with an experience record of more than 45 years at your service. Write—address Dept. CP-1053.



In storage — shipping receiving depts. with a HANDIBELT

• Conveys horizontally or at any decline and incline angle within its range. Easy to wheel about or adjust—fits in crowded aisles, cars, freight elevators. Handles commodities up to 135 lbs. Can be placed in series to form a complete conveyor line. Available in 3 sizes and belt widths. Write for Bulletin No. 63-D—address Dept. CP-1053.

For interdepartment communications and dispatch . . . pneumatic tube systems

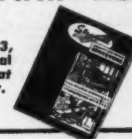


• Provide swift, sure, safe transportation of messages, documents, blueprints, samples, small parts, money: cylindrical or oval tubes 1½ inch upward with dispatching and receiving terminals for complete systems to meet your needs. Write for special Bulletin SPT11—address Dept. CP-1053.

STANDARD CONVEYOR COMPANY

General Offices: North St. Paul 9, Minnesota
Sales and Service in Principal Cities

Write Dept. CP-1053, for Standard's general catalog—tell us what you want to convey.



ROLLER • BELT • SLAT • CHAIN • WHEEL
PUSH-BAR • SECTIONAL

PORTABLE CONVEYOR UNITS:
HANDIBELT • HANDIPILER

GRAVITY & POWER
CONVEYORS VERTICAL LIFTS • PNEUMATIC TUBE SYSTEMS

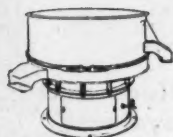
When inquiring check CP 4122 on handy form, pgs. 2-3

Easily adjustable for Perfect Screening of any material...

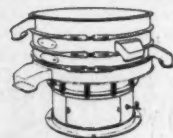


GRAINS
WOOD PRODUCTS
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DRUGS
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CERAMICS
PIGMENTS
BRICK AND TILE
SAND AND GRAVEL
PULP AND PAPER
WASTE DISPOSAL
METALLIC AND
NON-METALLIC ORES
ORGANIC CHEMICALS
INORGANIC CHEMICALS

SWECO spiral process SEPARATORS



Single Deck Screening



Multi-Deck Screening

The vibration of the SWECO Separator can be changed to fit the screening requirements of any material. Speed and turbulence can be controlled exactly for maximum throughput of the product whether wet or dry. The exclusive patented single or multi-deck design of the SWECO Separator greatly increases screening surfaces and reduces floor space requirements. No special foundation or base required for instant production because there is no transmitted vibration. For full information write today for Bulletin 12-3.

SEPARATOR DIVISION
SOUTHWESTERN ENGINEERING COMPANY
4800 Santa Fe Ave., Los Angeles 58, California
Cable Address: "SWECOLA"

SEPARATOR DIVISION
SOUTHWESTERN ENGINEERING COMPANY
4800 Santa Fe Ave., Los Angeles 58, California
Gentlemen: Please send me complete information,
Catalog and Data File 12-3

NAME _____
ADDRESS _____



S-12

When inquiring check CP 4123 on handy form, pgs. 2-3



Recent Books



CHEMICAL PROCESSING of WOOD

Reviewed by R. H. Beschler

Koppers Company, Inc.

During the past quarter century, emphasis has been placed on methods of improving wood to make it a more useful material. While this interest stems from an earnest desire by the scientist to develop longer life by the better use of wood, even Mr. Average Citizen realizes that wood in its unaltered state is frequently uneconomical at the present high costs of wood and labor.

This book by Alfred J. Stamm and Elwin E. Harris is an assembly of information on the modification of wood by both conventional and new methods as reported by the Forest Products Laboratory and by industry. In addition to methods of improving wood for specific applications, a considerable portion of the book is devoted to the physical and chemical properties of wood; its structure; mechanical, thermal and drying properties; extractives; products of destructive distillation; and fundamental chemical reactions between wood and other materials.

Other topics covered include: preservation and fire retardant treatments, wood-base plastics, high-strength paper laminates, pulp preforms, hydrogenation of lignin and wood, fermentation products other than grain alcohol, growing yeast and wood sugars, lignin-filled laminates and vanillin production.

To make this material readily understandable and usable, introductory chapters are devoted to fundamental explanations and reviews. The book is an excellent reference guide for the research chemist and engineer.

To obtain "Chemical Processing of Wood" remit \$12 direct to Chemical Publishing Co., Inc., Dept. CP, 212 Fifth Ave., New York 10, N. Y. When inquiring specify CP 4124, pages 2 and 3.

CHEMICAL PROCESS MACHINERY

2nd Edition

Reviewed by Bruce Alexander
Blaw-Knox Co.

The present edition is a substantial enlargement and improvement of author E. Raymond Riegal's "Chemical Machinery", published in 1944. Retaining the same page size, but with a more readable type, text content is about the same in the 735-page volume. A major improvement as to contents is in the illustrations, both views and diagrams, these having been increased in number to nearly 700.

The original arrangement of chapters and subjects, entirely adequate for a survey work of this kind,

has been retained. The charted "classification" of facilities of each type, located near the beginning of each chapter, is also retained. Latter is a helpful feature, differentiating between sub-types of equipment by designs and functions, and facilitating comparison of features.

New material has been added to each chapter, and some obsolescent items have been dropped. Rough cost figures, though of limited application, are provided for some units.

Major additions of basic material have been made in the sections on Distillation and Fractionation, Mixing of Liquids, and Instrumentation. In the latter, especially, usefulness of the information has been increased greatly by numerous simple, explicit diagrams, illustrating the application of various instruments and controls to specific operations and processes. The treatment of Distillation has been similarly improved; each type and arrangement of equipment is exemplified by a simple diagram of a specific application.

Material on low-viscosity mixing now includes useful power consumption information developed by Dr. Rushton and associates, as well as comprehensive enumeration and description of the various mechanical devices.

To obtain "Chemical Process Machinery" 2nd Edition remit \$12.50 direct to Reinhold Publishing Corp., Dept. CP, 330 W. 42nd St., New York 36, New York. When inquiring reader may specify CP 4125 on handy Reader Service slip between pages 2 and 3.

FIRE PREVENTION AND PROTECTION FUNDAMENTALS

Reviewed by Walter W. Stephen

Monsanto Chemical Co.
Anniston, Ala.

"Fire Prevention and Protection Fundamentals", by Gilbert E. Stecher, with Harry N. Lendall as consultant, is defined by the author as a study of comburology. Mr. Stecher originated the term comburology, which literally means the study of combustion, to tie together the many phases of fire prevention and protection. This 744-page book is based on a course given at New York University by the author for the past 10 years and on his findings as a special agent and fire inspector.

The text is an extremely inclusive compendium of information pertaining to these topics and should be of material value to everyone interested in any phase of the theory and practice of keeping fires from starting and putting them out when they do occur. Its chapters deal with the chemistry and

physics of combustion, phenomena that produce fires, flammable liquids, gases and dusts, and with a multitude of hazardous chemicals.

It contains building and electrical codes and much that has to do with water supplies and systems, municipal and industrial fire protection departments and types of apparatus and methods of employing them that have been developed and are in actual use by cities and plant fire brigades. It is well indexed and information in it may be easily found. This book seems authoritative and its bibliography impresses one as being an aggregation of most of the existing sources of written information about the fire business.

To reiterate, this publication should be an effective tool in the hands of fire protection engineers, inspectors, fire officers and firemen.

To obtain "Fire Prevention and Protection Fundamentals" remit \$10 direct to The Spectator, Dept. CP, 56th and Chestnut Sts., Philadelphia 39, Pa. When inquiring specify CP 4126 on handy form, pages 2 and 3.

INSECT, FUNGUS & WEED CONTROL

Reviewed by Walter E. Dove, Entomologist
U. S. Industrial Chemicals Co.

Division of National Distillers Products Corp.
Baltimore, Md.

This appears to be a small book, but from the standpoint of useful information, it is a big one. The author has made it possible for trained men working with pesticides to quickly find pertinent information on field uses of insecticides, fungicides and herbicides. In addition to concise statements based on recently published papers, each chapter is accompanied by a good bibliography.

Because this book bridges recent developments in three rapidly developing fields, it naturally shows some trends, which indirectly suggest some of the mistakes of the past. The abstracts of different papers do much to familiarize the reader with the acquired resistance of flies and some other insects to certain of the new pesticides. A future revision will no doubt round out additional information on the resistance of different organisms to pesticides, a subject that is beginning to receive increased attention in scientific papers. In like manner, one might expect a future revision of this book to include a chapter on mammalian toxicity of pesticides and to give information on the hazards to animals, plants and soils.

In general, Dr. deOng has given the reader a readily usable, 400-page reference book that can advantageously be kept in the pocket of the car, in the brief case, or in a desk drawer near the telephone.

To obtain "Insect, Fungus and Weed Control" remit \$10 direct to Chemical Publishing Co., Inc., Dept. CP, 212 Fifth Avenue, New York 10, N.Y. When inquiring specify CP 4127 on handy form, pages 2 and 3.

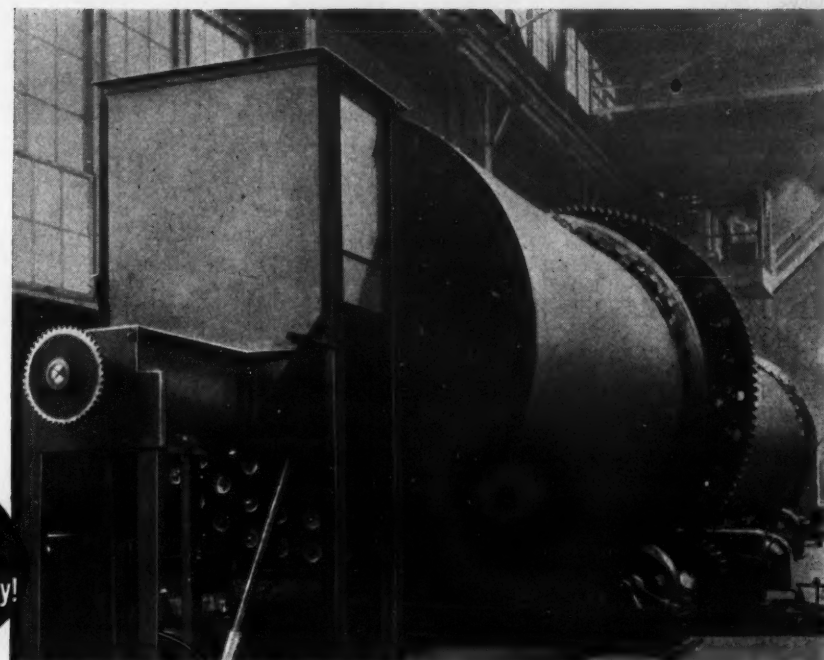
See Louisville for

**CREATIVE
DRYING
ENGINEERING**

LOUISVILLE ROTARY DRYERS
utilize 85% of all
available heat in steam!

**KNOW THE
RESULTS**
before you buy!

Ask for new
treatise on subject
of rotary dryers



Extremely high thermal efficiency is just one of the basic engineering advantages of Louisville steam tube Dryers. Any danger of case hardening is eliminated. Because of a very low air flow, finely divided material lost from the dryer cylinder is relatively small even though dryer may be handling unusually dusty material. Arrangements are included in each Louisville Dryer for complete and continuous removal of condensed steam . . . a unique steam

joint eliminates all thrust bearings.

Louisville Dryers are safe, automatic and economical. They require a minimum of labor, supervision and maintenance . . . and are carefully built for years of dependable service.

Write for new treatise on rotary dryers. Or call in a Louisville engineer. Have him look over your drying operation. Possibly a "predetermined", job-fitted Louisville Dryer can turn a losing operation into a profit maker.

Other General American Equipments:

Turbo-Mixers, Evaporators,
Dewaterers, Towers, Tanks,
Filters, Pressure Vessels



Louisville Drying Machinery Unit

Over 50 years of creative drying engineering

GENERAL AMERICAN TRANSPORTATION CORPORATION

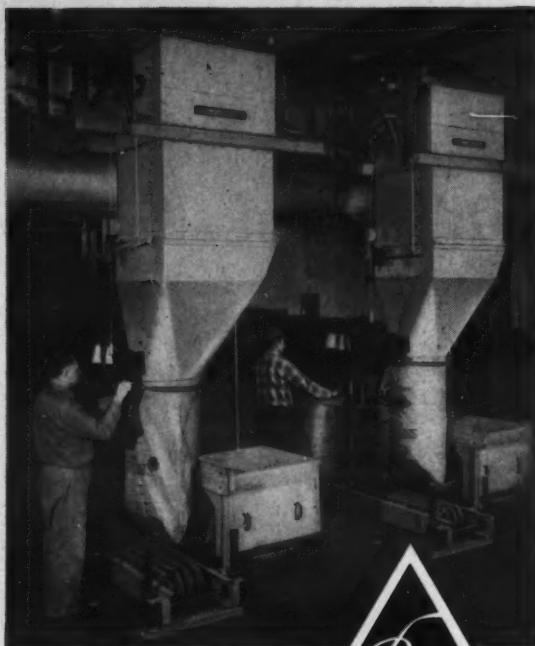
Dryer Sales Office: Hoffman Bldg., 139 So. Fourth Street, Louisville 2, Kentucky

General Offices: 135 South La Salle Street, Chicago 90, Illinois

Offices in all principal cities

In Canada: Canadian Locomotive Company, Ltd., Kingston, Ontario

When inquiring check CP 4128 on handy form, pgs. 2-3



RICHARDSON BAGS FOR



Blatz Brewing Company, brewers of one of Milwaukee's oldest and most famous beers, has a valuable by-product in dried brewers' grains. To make the bagging of these grains as efficient as possible, they called in a Richardson Engineer for recommendations. As a result, Blatz' dried grains are quickly and neatly packaged for resale in minimum size bags of consistently accurate weight.

For more than fifty years, Richardson has made a specialty of engineering and building systems for materials handling by weight. Over this period, Richardson has amassed a wealth of practical experience in solving bagging and automatic weighing problems for every branch of the process industries.

PROBLEM:

Weighing light, bulky, dried brewers' grains and packing them into minimum-size bags ACCURATE BY WEIGHT.

SOLUTION:

Installation of two Richardson Automatic Packing Systems each consisting of (1) a Richardson automatic scale, (2) Richardson oscillating packer to shake down the material in the filled bags, and (3) a Richardson V-belt Bag Sewing Conveyor. These two packing systems handle the entire output of Blatz bulky dried brewers' grains. Through the use of automatic bagging and a smaller bag size they effect a substantial saving over slower hand methods which do not use a packer.

Richardson Scale Co., Clifton, New Jersey. Feeder-Weigher Systems of All Types: Automatic Bulk-Weighing Hopper Scales, Including Conveyor-Feed Types • Continuous Feeder-Weigher Automatic Bagging Scales • Bag Sewing Conveyors • Packers Process Control Panels. *Branch offices in:* Atlanta • Buffalo • Boston • Chicago • Detroit • Houston • Minneapolis • New York • Omaha • Philadelphia • Pittsburgh • San Francisco • Wichita • Montreal • Toronto.

Richardson

8768

MATERIALS HANDLING BY WEIGHT SINCE 1902

When inquiring check CP 4129 on handy form, pgs. 2-3

packaging



Automatic cartoning machine in operation in packaging line at Chas. Pfizer's Brooklyn plant

Double Efficiency in Cartoning Bottles of Antibiotics

Breakdowns and delays eliminated by machine which opens carton, prints lot no. and expiration date, inserts bottle and brochure and closes carton

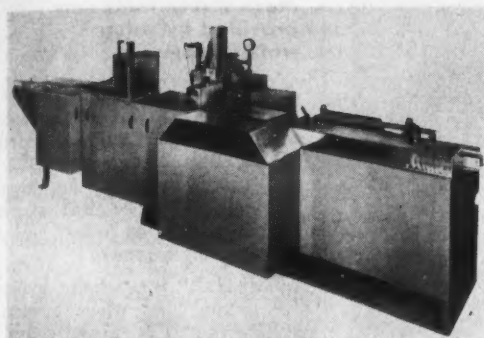
PROBLEM: At the Brooklyn plant of Chas. Pfizer & Co., the machine that was being used for cartoning bottles of terramycin and other antibiotics was inefficient. The production rate was undesirably low and excess labor was required. In addition, frequent breakdowns and delays in production occurred.

Solution: A Type 23 continuous-loading bottle cartoning machine was acquired and placed in operation. Bottles are automatically fed directly from the labeler preceding the cartoner in the packaging line. Machine lays each bottle down in a pocket of the intake conveyor. As the filled pocket approaches the loading station, a flat-stacked carton is automatically fed from its magazine and expanded. Machine prints lot no. and expiration date,

inserts bottle and brochure, and closes carton, thus eliminating delays.

At the Chas. Pfizer plant one operator is used for machine. It can handle bottles varying in capacity from two to twenty ml, with minimum down time for changeovers which will be necessary.

Results: It is estimated by the foreman in charge of this section that the efficiency has been about doubled by the use of the machine. Breakdowns and



Photograph of cartoner taken shortly before it left manufacturer's plant

delays have been eliminated. Output is higher and less labor is required. The cartoner is rated very highly and considered to be well built. Very little maintenance has been necessary during the three years it has been in operation. The cartoner is constructed so that it has a neat appearance.

(Type 23 bottle cartoner is manufactured by F. B. Redington Co., Dept. CP, 112 S. Sangamon St., Chicago 7, Ill. . . . or for more information check CP 4130 on handy form, pages 2 and 3.)

**Counts up to 350,000
capsules or parts
per hour . . .**

requires less than five minutes for change-over from one size or shape to another

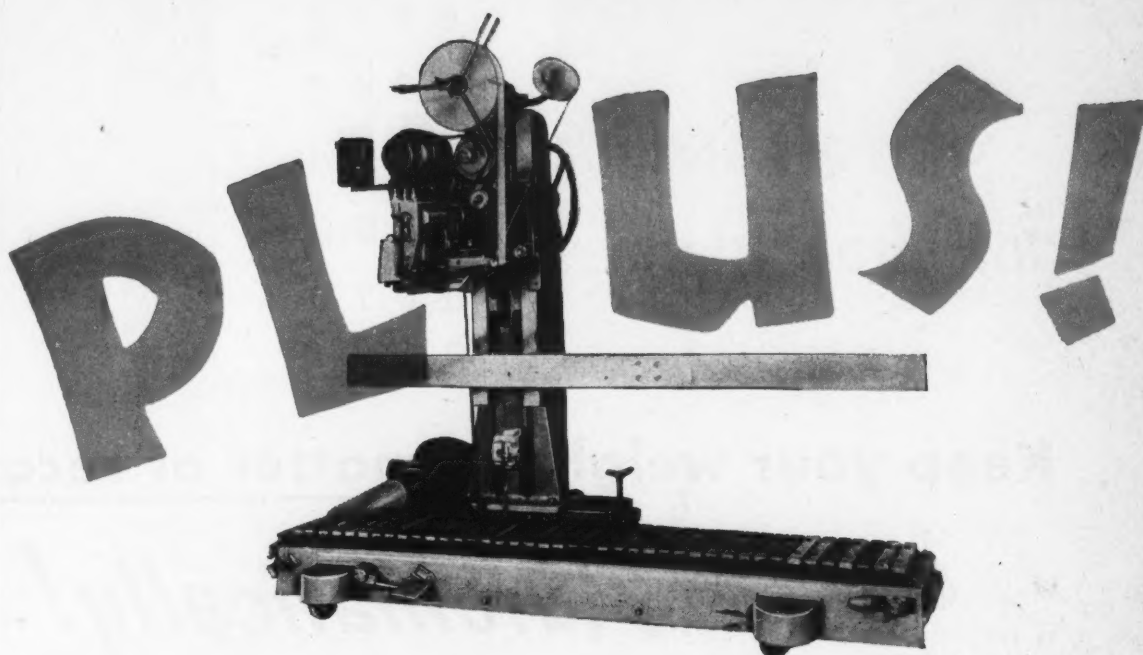
Uses: Unit is particularly adapted to handle the complete range of pharmaceutical tablets, pills, and capsules. However, it is also suitable for counting molded parts, machine parts, beads, balls, and other similar small parts. Machine can be utilized for packaging doctors' sample vials in quantities of 3, 5, and up, as well as in standard quantities of 50's and 100's.

Features: Up to 350,000 capsules or parts per hour can be handled by the machine, 100% accuracy of count being guaranteed, according to manufacturer. Less than five minutes is said to be required for changing over from one size or shape to another. Any count from 1 to 1000 can be obtained by merely setting the dials on the electronic instrument.

Description: Machine has a two cubic foot hopper for storage of the tablets or parts to be counted. Forming the bottom of the hopper is a pair of parallel rollers. Space between these rollers is adjustable by means of a handwheel. These rollers rotate so that the adjacent sides move upward. Rollers are inclined at an angle so that the rotating motion combined with the angular position causes the tablets to be fed down the rollers to the counting chute.

(Continued on page 103)

The Bag Closing Machine With a Real



There's an extra **PLUS** built into every model ET BAGPAKER delivered . . . the **PLUS** of assured day-in, day-out top performance.

The Model ET ties in with your existing filling and weighing equipment...closes open-mouth, multiwall paper bags semi-automatically... gives you sift-free, stronger, more economical bag closures with the famous BAGPAK cushion stitch.

You can count on the model ET BAGPAKER to give you faster packaging and better product protection...at lower cost.



Model ET applies famous "Cushion-Stitch" over dry tape for sift-proof closure. Model E-I applies "Cushion-Stitch" only, for use where sift-proofing is not essential.

Check these Economy and Efficiency Features:

- + Closes 15 filled bags a minute.
- + Fast adjustment to bags from 25 to 100 lbs.
- + Completely portable—rolls to any packaging station.
- + Bag starts and stops serving head when equipped with automatic control.
- + Hoepner No. 150 Heavy Duty Sewing Head with automatic brake to prevent "coasting".

Bagpakers available include models A, D-A, ET, E-I and F-I—with capacities from 60 tons per hour for the Model "A" to the small F-I where large volume is not required.

Write today for details, drawings and capacities to Bagpak Division, International Paper Co., 220 E. 42nd St., N.Y. 17, N.Y., Dept. P-14.

International Paper COMPANY
BAGPAK DIVISION

BRANCH OFFICES: Atlanta • Baltimore • Baxter Springs, Kansas • Boston • Chicago • Cleveland • Denver • Detroit • Kansas City, Kansas • Los Angeles • Minneapolis • New Orleans • Philadelphia • Pittsburgh • St. Louis • San Francisco • Wooster, O. • In Canada: The Continental Paper Products, Ltd., Montreal, Ottawa, Toronto.

When inquiring check CP 4131 on handy form, pgs. 2-3

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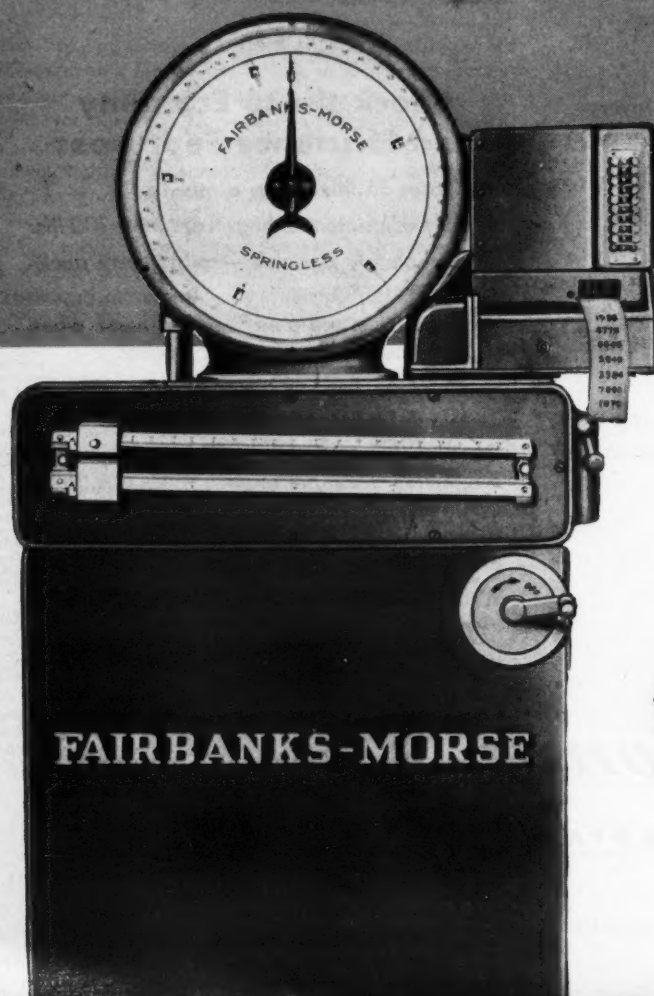
3 3 8 4

7 8 9 3

1 0 7 0

Keep your weights a matter of record

Automatically!



Rule out the chance for weighing errors with a Fairbanks-Morse Dial Scale with Printomatic Recorder. You save annoying, costly receiving and shipping disputes—you have a permanent record of each article weighed automatically!

The Printomatic is designed so that other pertinent information may also be printed with the weight for accounting or identification purposes. And, there's an electronic control for materials handling and processing.

See your local Fairbanks-Morse Scale Specialist about the Printomatic Recorder . . . and his complete line of scales of all types. Fairbanks, Morse & Co., Chicago 5, Illinois.



FAIRBANKS-MORSE

a name worth remembering when you want the best

SCALES • PUMPS • DIESEL LOCOMOTIVES AND ENGINES
ELECTRICAL MACHINERY • RAIL CARS • HOME WATER
SERVICE EQUIPMENT • FARM MACHINERY • MAGNETOS

PACKAGING

More secure fastening provided by using wider staple

A stapling hammer which drives a wider staple has been announced by manufacturer. Unit, Model H2BR, uses a staple of .102 x .030" wire with $\frac{3}{8}$ " leg length. Staple is said to be twice as wide as those used by other medium duty stapling hammers.

Model H2BR is especially designed for tacking jobs where a greater surface contact is needed. Applying insulation bats or roofing paper, and lining freight cars are examples of the many jobs that can be done effectively with a wider staple. Increased surface contact helps to prevent paper materials from tearing away from staples. One hand and one blow drive staple all the way home, even into hard woods.

Unit weighs 2 lb 8 oz and holds a strip of approximately 100 staples in its magazine.

(Stapling hammer is a product of Bostitch, Dept. CP, 1010 Mechanic St., Westerly, R. I. . . or for more information check CP 4132 on handy Reader Service slip between pages 2 and 3.)

Cleaner filling of bags reported

Valve-type gusseted bag for packaging free-flowing granular or pulverized materials is presented in 4-page, 2-color bulletin. Featured is a valve closing device which is an integral sleeve replacing standard inserts and sleeves. With device, bag is said to perform better on filling machines while giving a cleaner filling with a tighter closure and a neater package.

Bul on "Kraft-lok" Bags is issued by Dept. P, Kraft Bag Corp., Gilman Paper Co., subsidiary, Dept. CP, 630 Fifth Ave., New York 20, N. Y. When inquiring about the product reader may simply specify CP 4133 on convenient Reader Service slip, pages 2 and 3.

For more information on product at left, specify CP 4134 . . . see information request blank between pages 2-3.

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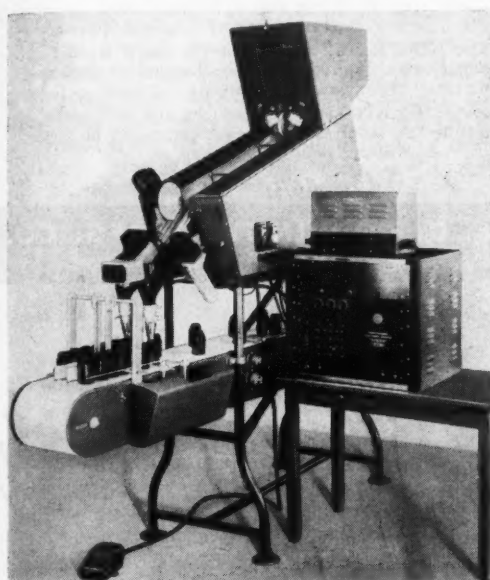
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OCTO

(Continued from page 101)

At the end of the rollers, capsules roll into a U-shaped channel with adjustable sides. In this channel they pass beneath a rotating disk which accelerates the tablets down the chute at a constant velocity. At the end of the chute, they intercept the light beam of the electric eye and are counted. At the end of the counting chute is the funnel housing. Two adjacent outlet funnels are provided. As the tablets leave the chute, they pass out into one of the funnels.

When the last count of a predetermined quantity is reached, a vane in the housing snaps over, shutting off one funnel, and deflecting the tablets out of the adjacent funnel opening and into the bottle. The action of this vane is synchronized with the velocity of the tablets so as to accurately separate



the last tablet of one batch from the first tablet of the next batch, regardless of counting rate.

All parts of unit are open and accessible, providing easy cleaning. Jamming of funnel or bottle will not occur even with a small bottle opening, according to manufacturer. No breakage is said to occur, even with soft pharmaceutical tablets. Dust, chips, and foreign matter are eliminated between rollers. Electronically synchronized conveyor is shown in accompanying photograph. This automatically positions the empty containers and removes the filled ones.

Rollers are driven by means of a U. S. Motors Varidrive, which has a 10 to 1 variable speed control. Speed is adjusted by means of a handknob on the outside of the machine. All adjustments are made by knobs or small handwheels, no special parts being needed to change-over from one size or shape to another.

Product of U. S. Engineering Co., Dept. CP, 40-24 22nd St., Long Island City 1, N. Y. . . . or check CP 4135, pages 2 and 3.)



Bulk shipments can travel bright and light

IN CONTINENTAL LEVERPAK DRUMS

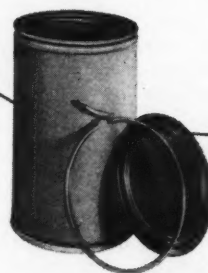
There's no reason in the world why your bulk shipments shouldn't look as attractive as any other packages in your line. Not when you can purchase Leverpak fibre drums!

As part of Continental's Tailor-Made Package Service, we make these drums in 17 eye-catching colors. We reproduce names and trademarks in any of 14 different inks.

But good looks is only part of the

story. Leverpak drums are capable of carrying up to 40 times their own weight — their resiliency lets them shrug off bumps or falls and handling abuse. They load compactly and ride safely. The patented locking device is easy to open, easy to close. Metal chimes are flash butt welded for greater strength.

Why not ask our nearest sales office what Leverpak and other Continental drums can do for you. We'll be glad to hear from you at your convenience.



CONTINENTAL CAN COMPANY

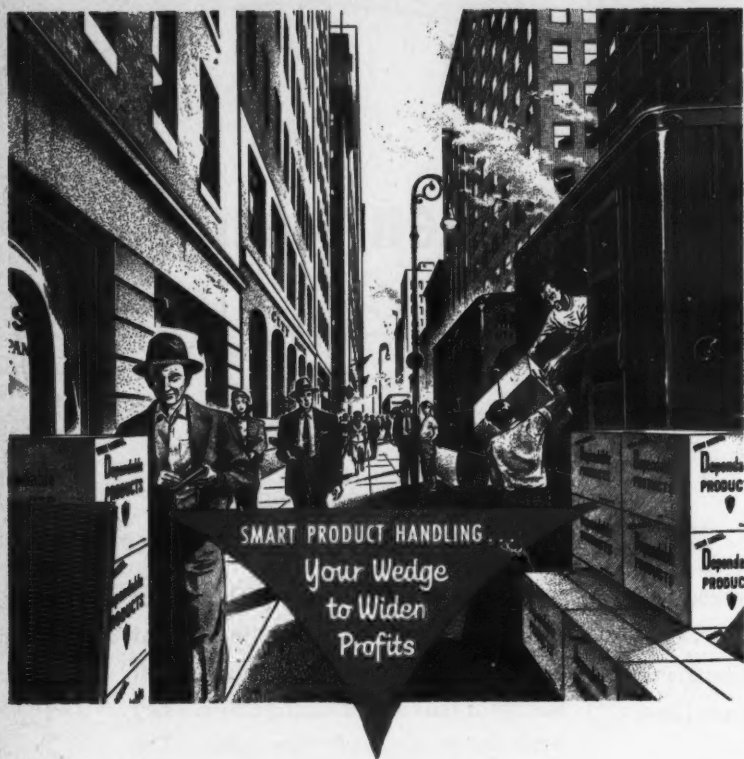
FIBRE DRUM DIVISION
VAN WERT, OHIO



New York • Philadelphia • Pittsburgh • Tonawanda • Cleveland • Chicago
Atlanta • St. Louis • San Francisco • Los Angeles • Eau Claire



When inquiring check CP 4136 on handy form, pgs. 2-3



Ship Your Sales Story Along With Your Product in Eye-Catching Gaylord Boxes

There are no extra freight charges for shipping a solid sales message on every attractively printed Gaylord box. You profit because your shipping dollars do double duty by promoting your product all along your channels of distribution. With these Gaylord "traveling billboards" you'll regularly reach hundreds of important buyers, sellers and handlers who see your product before it's unpacked.

Sizes, shapes and designs that work to promote your product, as well as to protect it, are an important Gaylord "extra" service . . . and with Gaylord's quality of materials and workmanship, you can be sure every box is as brawny as it is beautiful.

For information and cooperation, phone your nearby Gaylord office.

Gaylord Container Corporation

GENERAL OFFICES
SAINT LOUIS, MO.



SALES OFFICES
COAST-TO-COAST

CORRUGATED AND SOLID FIBRE BOXES • KRAFT PAPER AND SPECIALTIES • KRAFT BAGS AND SACKS • FOLDING CARTONS

PACKAGING

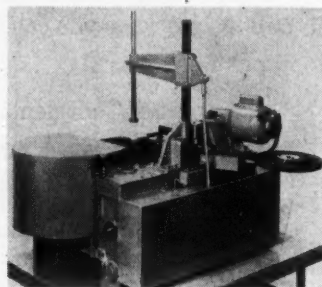
Automatically seals cans with P-S tape at rates to 900 cans/hr. . .

unit is especially suited for sealing to military specs

Uses: For automatic volume sealing of slip cover cans with pressure-sensitive tape.

Features: Machine is able to apply complete seals of plastic film tape around can covers at better than 900 cans per hr. Unit was developed for "faster and more economical" sealing jobs, according to manufacturer, and is especially adaptable for sealing cans according to military specifications, as well as those meeting the ordinary domestic can sealing requirements.

Description: Unit does the job by automatically starting tape on can, wrapping it as desired with



Developed for faster and more economical can sealing jobs

uniform tension and proper amount of overlap and cutting it at completion of seal. A single operator controls machine.

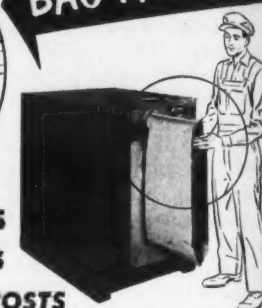
Automatic sealer is designed to handle cans 2 to 10" in diameter (one setting allowing a 4 1/2" diameter variation), and 1 to 12" in height (one setting permitting a 3" variation if container can be turned onto its cover during sealing — otherwise machine must be re-set for each new can height).

Built to fit into existing conveyor set-ups, machine weighs about 450 lb and occupies an area 2 1/2' wide by 3' long by 4' high.

(Automatic Can Sealer is a product of E and R Machine Company, Dept. CP, Parker Rd., Hamburg, N. Y. . . . or for more information reader may simply check CP 4137 on handy form, between pages 2 and 3.)

AUGER-MATIC

BAG PACKER



FILLS and WEIGHS

VALVE BAGS

CUTS PACKING COSTS

Quickly fills self-closing bags to the desired weight. Saves time in filling and eliminates need for sewing or other expensive bag closing equipment.

The AUGER-MATIC Bag Packer has a multi-twist auger which can quickly be changed to pack any material from powder to pellets.

AUGER-MATIC Packing reduces dirt and waste, a time and labor saver. Packer can easily be moved from one filling point to another.

Send for descriptive literature.

E. D. CODDINGTON MFG. CO.

5036 NORTH 37TH STREET • MILWAUKEE 9, WISCONSIN

When inquiring check CP 4138 on handy form, pgs. 2-3



EVERY
Kum-Kleen
LABELS

**THE EASIEST AND
MOST ECONOMICAL
LABEL YOU CAN USE!**

- TRADEMARKS
- GUARANTEES
- NAMEPLATES
- DIAGRAMS
- APPROVAL SEALS
- INSTRUCTIONS
- "BUY" FEATURES
- WARNING
- INSPECTION
- PRICES

SAVE YOU TIME - MONEY!

An Avery label specialist will gladly explain how you can use Kum-Kleen pressure-sensitive labels profitably in YOUR business. Mail the coupon now for complete facts.



EVERY ADHESIVE LABEL CORPORATION

117 Liberty St., New York 6 • 1616 S. California Ave., Monrovia, Cal.
608 S. Dearborn St., Chicago 5 • Offices in other principal cities

- ☐ Please send case histories and samples
- ☐ Tell us about your electric label dispenser
- ☐ Have the local Avery man call

Name _____
Title _____
Company _____
Address _____

When inquiring check CP 4139 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**"Shock treatment" for containers
points way to better design,
packing methods . . .**

incline tester simulates "humping" of box car,
3-dimensional impact recorder gets data

Shipping container manufacturer recently reported that an improved wirebound design had been subjected to "shocking" tests, and passed. Impact, or shock-testing of container was accomplished on a recently-developed incline tester which was built to specifications of the Association of American Railroads, but made proportionately larger to accommodate firm's "king-size" wirebounds for bulkier, heavier loads. Tester conforms with industry's recent move to standardize all such devices as to angle of incline, calibration of "zones," etc. "Zones" of the incline are fixed in accordance with procedures recommended by the National Safe Transit Committee.

Container to be tested is placed on the "dolly," pulled up incline automatically to a predetermined height, then released and allowed to collide against a rigid backboard at bottom of incline. This shock simulates "humping" of a freight car, and is accurately recorded on the Impact-O-Graph, a small 3-directional impact recorder, which is attached to



Engineers check results on Impact-O-Graph after subjecting container to shocks like those received in shipment and handling

container. Resulting data and evidence are applied to design and construction revisions until container tests satisfactorily.

Where other causes of damage must be considered, test shipments are made using a different model of the Impact-O-Graph which accompanies shipment secured inside container with the contents. Number and severity of shocks, direction and time of occurrence are recorded. Results obtained form basis of standards to be used in lab-testing for that particular container and its contents. A number of such tests have indicated shipments are more often over-packed than under-packed, thus increasing weights and costs unnecessarily.

(Information for this article on incline tester was provided through the courtesy of American Box Company, Department CP, 1900 West Third Street, Cleveland, Ohio.)

A MAJOR USER OF MULTIWALL BAGS ANSWERS A CANDID QUESTION



User: **DRAGON CEMENT CO., Inc., New York, N. Y.**

QUESTION:
"How have you used
Multiwall Bags in
your merchandising
program?"

**"THE PRINTING SURFACE
ON OUR MULTIWALL BAG
GIVES US AN
ADVERTISING BILLBOARD"**

The distinctive Dragon design identifies seven major products manufactured by this well-known company in the cement industry.

The familiar design which establishes the family relationship among Dragon products was developed by Dragon Cement personnel in cooperation with the Union Bag Art Department.

Good design, good printing, and a uniformly good printing surface make Union Multiwall Bags an extra advertising medium for your product as well as an economical container.

MORE SO EVERY DAY, IT'S



UNION for MULTIWALLS

CP-1053

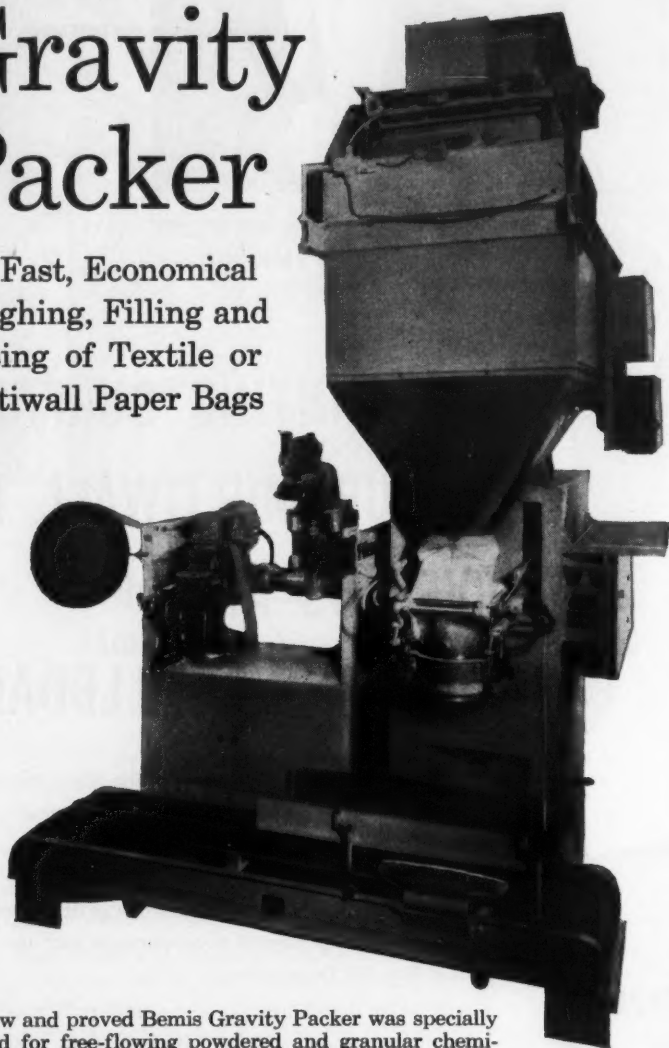
UNION BAG & PAPER CORPORATION • WOOLWORTH BUILDING, NEW YORK 7, N. Y.

When inquiring check CP 4140 on handy form, pgs. 2-3

It belongs in your Packing Room

Bemis Gravity Packer

For Fast, Economical Weighing, Filling and Closing of Textile or Multiwall Paper Bags



This new and proved Bemis Gravity Packer was specially designed for free-flowing powdered and granular chemicals. Handles 50-lbs. to 100-lbs. One- or two-man operation. Speeds—up to twelve bags per minute are normal. Actual production records of many concerns show a much higher out-put on this machinery. Ask your Bemis Man for the complete story.

Bemis



Packaging Service
305—27th Avenue Northeast
Minneapolis, Minnesota

When inquiring check CP 4141 on handy form, pgs. 2-3

PACKAGING

Compact unit fits tabletop, seals 5 ml glass ampuls at 3000 per hour . . .

automatic or semi-automatic units seal perfectly, rejection rate almost nil

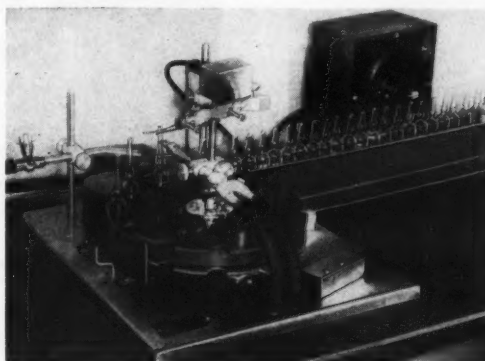
Uses: For sealing glass ampuls in sizes up to 100 cc, or, in automatic production, containers up to 50 ml capacity. Also for glass tube sealing.

Features: This compact unit will fit on a bench or tabletop. Sealing speeds can be varied to suit the operator's ability to feed the machine. Ampuls up to 5 ml are sealed at rates of 2000 to 3000 per hr; 10 and 20 ml sizes at rates of 1500 to 1800 per hr; and the 50 ml size at rates of 1000 to 1200 per hr. Only one operator is needed.

Description: Basic ampul and tube sealer equipment is the same for all methods of sealing and for all types of seals. Tip removers and timers are inter-changeable and adapted to fit the machine without modification. It is said that the user can change from one type of ampul to another without loss of inventory on hand. Special adaptations for containers of unusual shapes can be provided when required.

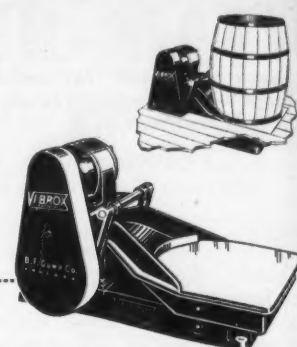
Change-over from one type or size ampul to another is simple. Rotary carrier is changed by lifting out center pin and substituting a suitable carrier. Tip removal mechanism and burner are adjusted to proper height on their supporting standards. Other minor adjustments are quickly made. Total change-over time is said to be less than 5 min.

Machine makes twisted-drawn seals of both bell-top and straight stem ampuls and tubes as well as tip seals (melt down seals) of trim stem am-



Machine set up for twisted-drawn sealing. Timer is at right with dial visible so instant adjustments can be made. Tip remover is seen above ampuls. Only one operator is needed

puls. In operation, ampul is placed in rotary carrier, automatically positioned in the intense flame, rotated and held down. A rubber belt rotates the ampul and advances the carrier. This rubber belt is the only part of the machine which is directly connected to the drive motor (1/20 hp gearmotor, 115 v, 60 cycle).



VIBROX PACKERS

For BIG Savings in Labor and Container Costs!

A prominent chemical company* writes . . . "Our No. 41 Vibrox Barrel Packer is giving us excellent service, and we would like to purchase another one just like it."

Users of Vibrox Packers usually order additional units after trying their first Vibrox. These rugged, low cost Packers pack dry flaked, powdered granular or crystalline chemicals quickly and *densely*, to effect big savings in container costs, packing time and labor. Vibrox Packers are made in several sizes to pack 5 to 750 pound kegs, cartons, barrels and drums; also in special models for bags. Write today for complete information on Vibrox Packers—or use the coupon below for data on other Gump-Built Equipment for chemical process plants. Ask for your copy of new Gump Catalog 801.

*NAME ON REQUEST.

B. F. Gump Co.



Engineers and Manufacturers
Since 1872
1344 SOUTH CICERO AVE.
CHICAGO 50, ILLINOIS

Gentlemen: Please send me descriptive literature and complete information on the GUMP-Built Equipment indicated below:

- ☐ BAR NUN Rotary SIFTERS
- ☐ ROTARY FLASK AGITATORS
- ☐ DRAWER FEEDERS—for accurate volume percentage feeding.
- ☐ DRAWER Continuous Mixing Systems—accurate, efficient mixing.
- ☐ VIBROX PACKERS—pack dry materials in bags, drums, barrels.
- ☐ NET WEIGHERS—automatic weights range from 3 oz. to 75 lbs.

When inquiring check CP 4142 on handy form, pgs. 2-3

CHEMICAL PROCESSING

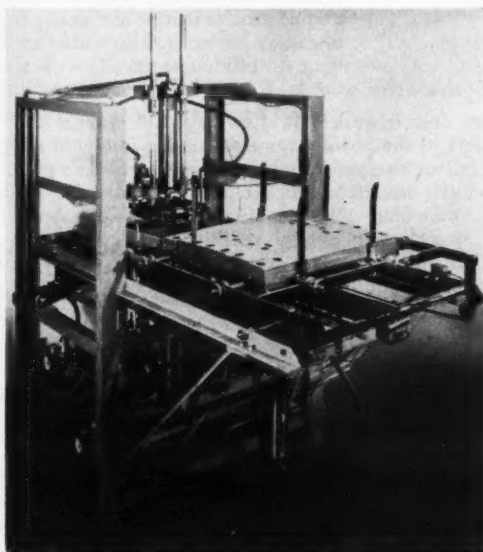
After sealing, rotary carrier, acting as a cam, transfers sealed ampuls to a receiving magazine where they are progressively fed into a receiving tray. During their stay in the magazine, the ampuls are completely cooled. Upon ejection into receiving tray, ampuls contact a series of resilient baffles arranged in steps to allow them to fill the tray without breakage or jamming.

During entire sealing operation (which is performed so well and uniformly that rejection rate is said to be almost nil), from the time the ampul is fed into the machine until ejection, it is never gripped except between rubber belt and plastic rotary carrier. All during its stay in the machine the ampul is handled as gently as if it were held between the fingers of the operator.

(Product of Kahlenberg Laboratories, Dept. CP, Sarasota, Florida . . . or for more information check CP 4143 on handy form, pages 2 and 3.)

Minimum manual labor required with box folding machine

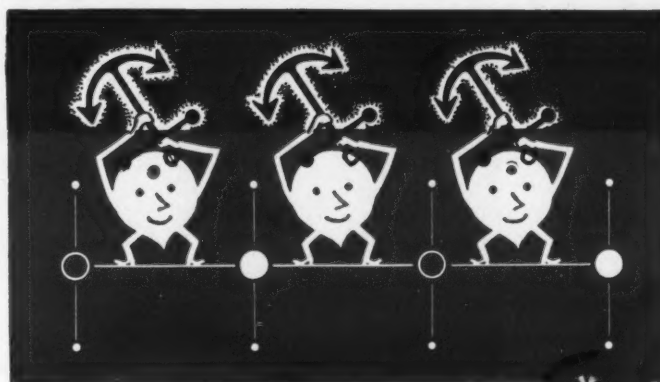
Pneumatically-activated box folding machine is designed to package, with a minimum of manual labor, items which require high end or side strength and/or high stacking strength. Hopper feed of the machine is capable of holding up to 100 box blanks which is equivalent to approximately 6 to 7 minutes of production. Thus, man-power requirement is approximately 5 man-minutes per machine hr,



Man-power requirement is approximately 5 man-minutes per machine hour

according to manufacturer. Unit will be coupled with powered conveyor sections and automatic filling machines, eliminating virtually all man power. (Product of Gaylord Container Corp., Dept. CP, 111 N. 4th St., St. Louis 2, Mo.

when unmodified PVAc (POLYVINYL ACETATE) won't adhere...



TRIPLES TENSILE STRENGTH!

Peel Tensile Strength

Regular PVAc72 lbs./sq. in.

National's VA copolymer 14L04 . . .2.22 lbs./sq. in.

Test run on acetate-foil laminations, with an adhesive coverage of 4 lbs./3000 sq. ft. Both products were formulated and plasticized similarly, with PVAc in 30% solution.

SUGGESTED USES

- Heat-seal and solvent-reactivating coatings
- Adhesives for transparent sheetings, foils, varnished papers, inked papers, and other difficult surfaces
- Greaseproof and asphaltproof coatings
- High-solids emulsions and lacquers
- Binders for paper, fibers, cork, asbestos, etc.
- Sizes and binders for textiles and carpets

. . . or National will tailor-make a vinyl acetate copolymer for your specific use.

RESYNS®
National
ADHESIVES

270 Madison Avenue, New York 16, N. Y.

try a vinyl acetate COPOLYMER



National COPolymerizes vinyl acetate to give it better adhesive and cohesive properties. The result? Higher specific adhesion to difficult surfaces such as foil, cellulose acetate, varnished papers, inked papers, etc.

National's vinyl acetate copolymers are available in emulsion, solution, or hot melt form. They give you excellent clarity and light stability. Write for technical data.

I'd like to talk to a National representative about Vinyl Acetate COPolymers.

Name _____ Title _____
Company _____
Address _____
City _____ Zone _____ State _____

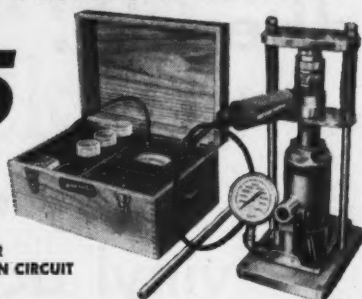
When inquiring check CP 4145 on handy form, pgs. 2-3

A 1 MINUTE MOISTURE CHECK

INSURES QUALITY OF PRODUCT
WHEN YOU USE THE
NEW MOISTURE REGISTER

G5

EXCLUSIVE
R. F. POWER
ABSORPTION CIRCUIT



PROVED IN THE FIELD ON

SUGARS

STARCHES

FLOURS

CITRUS PULPS

SOAPS

DRIED EGGS

FEEDS

POWDERED CHEMICALS

YEASTS

BAKING MIXES

MEALS

FERTILIZERS

Send Coupon TODAY!

**ELECTRONIC
MOISTURE REGISTER**

Moisture Register
testing equipment
is the standard in moisture
testing for all industries.

1510 W. Chestnut St., Alhambra, California, Dept. CP

Please send me complete information on MODEL G5
MOISTURE REGISTER. I want to test _____
(MATERIAL)

NAME _____ TITLE _____

COMPANY _____ ADDRESS _____

CITY _____ STATE _____

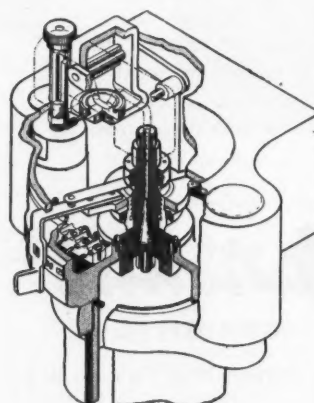
*for the
laboratory*



Particle size analyzer incorporates powder feed system (tank at left and unit at top center), a sedimentation system (tube at center), and a weighing system (bottom center). Operator holds "tube" aside to inspect pan of weighing mechanism. Device is self-operating, once started

WHY determine particle size? It is an important yardstick of material behaviour. Covering power of pigments in paint is critically controlled by particle size distribution. Other materials where it is an important property include: cements, metal powders, abrasives, ceramics, drugs, insecticides, cosmetics, and so forth.

One method that has been used in the past has been actual counting of particles of various sizes.



Schematic shows details of deagglomerator. Scale, lower left, is calibrated directly in microns . . . makes settings unit for any particular a simple and easy operation

Sensitive balance mechanism records weight increase after catching particles which have completed 88-inch fall through "tube". Drawing shows sectional view of servo-electronic balance, housing and sedimentation column

FAST Determination Of Particle Size Distribution

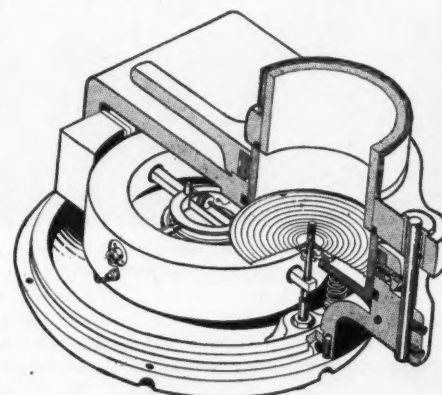
Three trained men working 4 months can get an answer with a probable error of 150%. — analyzer does it in an hour with an error of 3%

In one such case, three trained operators worked for four months (they counted about 70,000 particles) to determine size distribution. Their results had a probable error of $\pm 150\%$.

Newly introduced Micromerograph can perform an analysis like this in something like an hour — producing results with a

probable error of only $\pm 3\%$.

How does it work? It allows a sample (about 0.1 gram) of the powder to be suspended in air. Rate of fall of the particles is governed by Stoke's law (velocity inversely proportional to square of particle diameter). By catching particles after about an 88-inch fall, a very sensitive balance records weight increase. And from the weight-time curve size distribution can be figured mathematically.



When inquiring check CP 4146 on handy form, pgs. 2-3

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Among the advantages of this method, short time per test ranks high — fifteen minutes is often sufficient time for a whole test. But another important fact is that sample used (about 0.1 gram) is composed of *billions* of particles. Hence, statistically, error is low. In addition to these, instrument is simple to operate (no technical skill is required), and once started runs a test unattended.

The Tube

Starting with the powder feed system, sample is forced through a "deagglomeration" slit by dry nitrogen under pressure. This has been found to give reproducible results and does not break particles. Amount of gas used is small enough not to effect particles in the settling tube.

Particles now begin their fall down the 4-inch diameter aluminum tube. Initial cloud is usually about 8 inches (roughly 10% of tube height) high. And, of course, particles tend to separate according to size in falling. Usual range of instrument is 1 to 100 microns (diameter times square root of density equal to 2.5 to 250).

The Balance

At the foot of the tube, particles land on an aluminum balance pan. This single pan is supported from a torsion wire and carries the armature of an electromagnetic pickup. A 6 kilocycle carrier is fed to a differential transformer of which the armature is an element. Picked-up signal is amplified, drives a torque motor which rebalances the transformer continuously. Output is also shown on a recording milliammeter.

Record of this servo-balance set up is proportional to cumulative particle weight. Since the other axis of record is time, all that needs to be filled into Stoke's law is density of the material for absolute answers to particle size distribution.

Instrument requires only electrical power and bottled nitrogen. It occupies a floor space of about 2 square feet (13 x 23 inches) and stands 8½ feet high. It is already in use at several plants.

(Micromerograph was developed in the laboratories of The Sharples Corp., Dept. CP, Bridgeport, Pa. . . . or for more information check CP 4147 on handy form, pages 2 and 3.)

Describes laboratory apparatus — from furniture to ovens

Eighteen-page, illustrated bulletin deals with various types of laboratory equipment including ovens, manometric apparatus, Jolly balances, glassware washers, plastic pipe, constant temperature regulators, and laboratory furniture. Numerous photographs supplement descriptive text.

"CA Notebook — June 1953" is issued by Chicago Apparatus Co., Dept. CP, 1735 N. Ashland Ave., Chicago 22, Ill. When inquiring specify CP 4148 on handy Reader Service slip between pages two and three.

What's happened to the more than 1,800 Corrosion-Resistant Coatings introduced

Since 1939



Hard to believe, isn't it, that in less than 15 years more than 1800 brand names of protective coatings have made their market appearance . . .

and disappearance.

Only a relatively few remain.

WHAT HAPPENED?

Many good coatings failed to last because their makers ballyhooed them too highly — practically forced corrosion engineers to use them under conditions where no coating could possibly work.

Many other so-called protective coatings just didn't have it to begin with.

The fact that Tygon Paint — first marketed in 1939 — has grown increasingly popular over the years, stems from two things:

First: it is a good protective coating

Second: we're not afraid to admit its limitations

Used as it should be used and under conditions for which it is suitable, Tygon Paint will outperform and outlast practically any coating on the market. Fifteen years have proved it.

We have one suggestion to make on the use of protective coatings. Write for a copy of Tygon Paint Bulletin 750. Check the performance data against the corrosives listed. If Tygon Paint appears to offer an answer to your corrosive problems — buy a trial quantity — *and test it.*

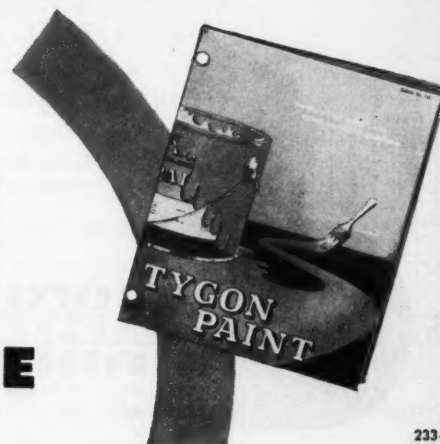
**PLASTICS
AND
SYNTHETICS
DIVISION**

**FREE BOOKLET
ON REQUEST**

Tells you just what you can expect from Tygon Paint and Tygorust under the corrosive conditions that exist in your plant. Address Plastics & Synthetics Division, The U. S. Stoneware Co., Akron 9, Ohio.

U. S. STONEWARE

AKRON 9, OHIO



When inquiring check CP 4149 on handy form, pgs. 2-3

233-D

make Perchloric Acid handling safer!

Precautions that must be taken in handling perchloric acid make special hoods a necessity. Now Alberene Stone offers you fume hoods *specially designed* to reduce hazards in working with perchloric acid . . . *specially designed* to give you greater safety. For prompt advice on any of your fume problems write Alberene Stone Corporation of Virginia, 419 4th Ave., N. Y. 16, N. Y., or visit our nearest branch office.

When inquiring check CP 4150 on handy form, pgs. 2-3



Alberene Perchloric Hoods in Research Laboratory, International Nickel Company, Inc., Bayonne, New Jersey

FREE REPRINTS

of an article
giving helpful hints
on safe handling
of perchloric acid
are yours for the
asking. Just write
today on your
company letterhead.



ALBERENE STONE

Branches in Principal Cities

first

to create and pioneer Steel Laboratory Furniture with:

- Unitized Sectional Construction
- Lock Joint Construction
- Micro Levelling Devices
- Split Reagent Shelf Supports
- Chemical Resistant Enamel
- "Labflex" Patented Construction
- "Pipemaster" Patented Service Racks
- "Labmaster" Design Patented Service Fixtures

See our Exhibit — Booth 38 at the 24th Chemical Exposition, Commercial Museum, Philadelphia

Write for Catalog

laboratory furniture

COMPANY INC.

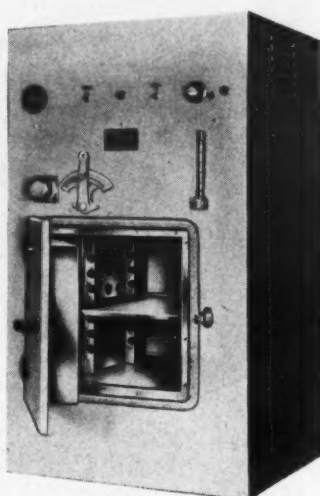
Old Country Road, Mineola, N. Y

When inquiring check CP 4151 on handy form, pgs. 2-3

LABORATORY

Table model oven uses a minimum of space

Although having interior chamber dimensions of 12 x 14 x 14", table model mechanically convected oven has external dimensions of only 23 x 20 x 40" — taking up fifty per cent less table space than the ordinary comparable table models.



Takes up 50% less table space

In addition, the floor of the working chamber is just 9" above the table making it easy to load and unload the unit. All controls are located above and out of the way of the working chamber, yet within easy reach for adjustment.

Unit is available with either heavy gage steel exterior, finished in baked-on laboratory gray enamel, with a polished stainless steel interior, or entirely constructed of corrosion-resistant 18:8 polished stainless steel.

Range of the oven is from 35 to 180°C with a temperature differential of plus or minus 0.5°C. Unit is equipped with an adjustable hydraulic control thermostat and an over-temperature thermal switch which prevents the chamber temperature from exceeding the control setting.

(Manufactured by The Electric Hotpack Co., Inc., Dept. CP, 5097 Cottman Ave., Philadelphia 35, Pennsylvania . . . or for more information about this development, reader may simply check CP 4152 on handy form, pages 2 and 3.)

where **HEAT** eats metal
paint with **THERMALITE**
and protect up to **1000°**

NEW SILICONE HIGH-HEAT ALUMINUM PAINT FUSES TO METAL . . . PROTECTS AGAINST RUST AND CORROSION

A revolutionary paint development, Thermalite fuses to metal, will not discolor, blister, burn or flake off—even at 1000° heat! Protects against rust, corrosion, chemical fumes. Formulated to stand severe weather exposure as well as high heat.

Ordinary aluminum paints flake off under high heat because the resins burn out. Thermalite's film-forming solids consist of "silicones"—the wonder resin that defies heat, fuses to metal, producing a tough, silver-bright, tightly-adhering coating.

In hundreds of applications industrial users have proved that Thermalite solves their problem of obtaining a paint coating that withstands 400° to 1000° heat. Two types available, one for interior, the other for exterior metal surfaces.

FREE! . . . to industrial paint users. Your letter-head request brings complete information on Thermalite for interior or exterior use. Write today!

THE TROPICAL PAINT AND OIL CO. SINCE 1883
1128-1296 W. 70th Street, Cleveland 2, Ohio

When inquiring check CP 4153 on handy form, pgs. 2-3

MAIL COUPON BELOW

Stop GAS and ACID LEAKS

with

CHARLAB CHEMICAL PUTTY

Waterproof Acid Resistant Stays Plastic

Charlab Chemical Putty stops gas and acid leaks at flange joints, packs expansion joints efficiently, and makes tight joints at bell and spigot connections.

Packed in 10-50-75-150-450 pound containers. PRICE: 10 pound containers, 40c per pound F.O.B. Charlotte, N. C. All other standard containers 30c per pound F.O.B. Charlotte, N. C.

Please send me: Sample & descriptive literature.

NAME _____
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CITY _____ STATE _____

CHARLOTTE CHEMICAL LABORATORIES, INC.
Templeton Ave., Charlotte, N. C.

When inquiring check CP 4154 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Step up Rag Cutting Production



Whether you are cutting rags for roofing paper, felt, plastics, or textiles, this modern machine will help you to up production.

The Taylor-Stiles machine shown here is cutting 10,000 pounds of rags per hour for National Vulcanized Fibre Company of Wilmington, Delaware, for the manufacture of Phenolite.

Important textile roofing paper, and textile mills are standardizing on Taylor-Stiles cutters — the standard of excellence in rag cutters for nearly a century.

We will gladly give you full information about our cutters for your specific cutting purpose.

TAYLOR-STILES
Company
CUTTING MACHINES & KNIVES

20 Bridge St. Ringelsville, New Jersey

When inquiring check CP 4155 on handy form, pgs. 2-3

FOR THE LABORATORY

Twenty-five radioactive compounds allow laboratory users to study many chemical processes . . .

require no elaborate safety precautions

Uses: Radioactive tracers make possible investigation of chemical, physical and biological processes which can hardly be studied as well — or in many cases, at all — in any other way. Among the biological and biochemical studies facilitated by the tracers is carbohydrate metabolism, fermentation, protein metabolism, studies of cancer-inducing elements, detoxification mechanisms, and stimulants.

Features: Users need no Atomic Energy Commission authorization, no formal training in the use of tracers, and no elaborate safety precautions.

Description: Twenty-five different radioactive compounds for chemical, pharmaceutical, and industrial laboratories have been recently announced. These materials are safe, inexpensive radioisotopes which are marketed just like other laboratory chemicals. Compounds are sold in microcuries — a thousandth of a millicurie; hence no AEC authorization is needed by the user.

Each of the reagents comes in a small screw-capped glass vial whose walls absorb all of the radiation of the contents. Total radiation per vial of reagent: one microcurie (37,000 disintegrations per second). Vials can be packed together in large numbers without fear of radiation hazard.

The "hot" atom built into the reagents is carbon-14 — selected because of its extremely long "half-life" which is 5700 years. This permits research projects to be carried out without mathematical corrections and haste.

(Radioactive reagents are manufactured by Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. . . . or for more information check CP 4156 on handy Reader Service slip between pages 2 and 3.)

Bulletin gives complete specs of 3 X-ray diffraction units

Informative bulletin describes basic X-ray diffraction apparatus to which various accessory units can be added to adapt equipment to different type determinations. Three standard units are available, all incorporating the same basic high-voltage generator, control and housing cabinet. Each unit is complete in itself for the purpose for which it was designed, yet its service range can be infinitely extended by the addition of standardized instruments and accessories.

Bulletin describes each of the three individual units and their components, and includes numerous photographs of the various units.

Bul 7A-3080B is issued by General Electric X-ray Corp., Dept. CP, 4855 Electric Ave., Milwaukee 14, Wis. When inquiring specify CP 4157 on handy form, pages 2 and 3.

Type 70-T Temperatures to 1950° F.

The new design of these furnaces provides you with a complete and compact self-contained unit. The base contains a tap-changing transformer equipped with two selector switches which offer 36 steps of temperature control. Larger size tube furnaces are available. Write for Bulletin 552.



Type
123-T

Each Section
Separately
Controlled

This Organic Combustion Tube Furnace, made in three movable sections, is a convenience for the modern organic analysis laboratory. This furnace can act as one or as three separate units. The use of tap-changing transformers allows closer temperature regulation and means savings in power and maintenance. The furnaces are hinged for easier operation. Write for Bulletin 735R.

HEVI DUTY ELECTRIC COMPANY

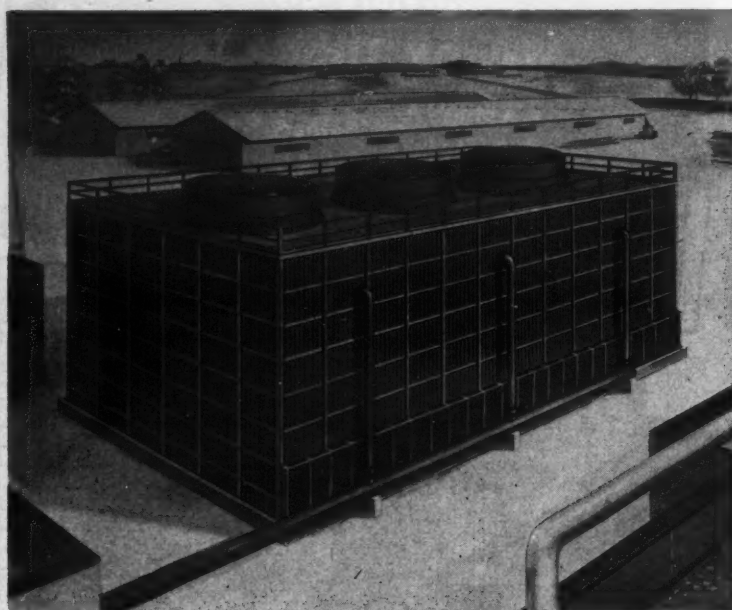
MILWAUKEE 1, WISCONSIN
Heat Treating Furnaces... Electric Exclusively
Dry Type Transformers Constant Current Regulators

When inquiring check CP 4158 on handy form, pgs. 2-3

SANTA FE'S NEW "MD-54" COOLING TOWER CUTS INITIAL COSTS, INCREASES PERFORMANCE

Los Angeles . . . Cooling tower design has undergone a number of significant improvements. After holding faithfully to the basic pattern, the Santa Fe Tank & Tower Company, Los Angeles, has taken an aggressive step toward developing a cooling tower with a substantially improved construction design. The newly designed tower is said to

the "MD-54" two separate and distinct standard types of wetted surfaces. After a series of extensive tests, it was found that one surface is best suited to lowest first cost, and the other surface to the lowest evaluated cost on an amortized basis. This makes the "MD-54" the most adaptable to meet the requirements of each individual plant.



require fewer parts for construction, which in turn, allows for faster erection and less maintenance.

Santa Fe engineers branded their new tower the "MD-54" which is the result of a series of laboratory and field tests that measured all performance factors in relation to its new structural features. Simplified construction and better utilization of materials in the "MD-54" is the key to the new design and improved performance.

Santa Fe engineers have designed for Santa Fe Tank & Tower Co., 5401 So. Boyle Ave., Los Angeles 58, California

According to Santa Fe, the basic design of the "MD-54" cooling tower allows for the largest possible range of size variations.

A new bracing system designed for minimum obstruction to the free flow of air results in better cooling performance. This new bracing requires only two specially designed joint connectors in conjunction with 3 standard braces to build any size or combination of sizes, shapes of the "MD-54" cooling tower.

When inquiring check CP 4159 on handy form, pgs. 2-3

LABORATORY

Testing units available
in capacity range
from 1-4 cu ft

Uses: For high and low temperature testing.

Features: Overall compactness of vertical models and the minimum floor space they occupy — just 7.5 sq ft — in relation to chilling chamber size, particularly suit these units to laboratory and testing needs.

Description: The Sub-Zero Series V-120 units will operate at temperatures from plus 250°C to minus 130°C. Manual and automatic control of temperature can be provided. To reach low temperatures, a system is used which assures speedy temperature pull-down, which can be varied to suit user's requirements.

For the high temperature cycle, an automatically controlled waterproof, explosion-proof heater is used. Test chamber of unit is equipped with a fan for controlled air flow and uniform temperature distribution.

(Cabinets are manufactured by Sub-Zero Products Co., Dept. CP, Reading Rd. at Paddock, Cincinnati 29, Ohio . . . or for more information check CP 4160 on handy form, pages 2 and 3.)

Outlines information on peroxide bombs

Eight-page bulletin describes 5 different sodium peroxide bombs and accessory apparatus for determining sulfur, halogens and other elements in combustible organic materials. The bombs are small pressure vessels in which samples can be subjected to the intense oxidizing action of sodium peroxide at a temperature high enough to burn most carbon compounds.

Bombs are available in 4 different sizes for macro, semi-micro and micro tests, and in both electric and flame ignition types.

Spec No. 2000 is issued by Parr Instrument Co., Dept. CP, 211 Fifty-third St., Moline, Ill. When inquiring specify CP 4161 on handy form, pages 2 and 3.

Practical Lab Men Like Their Despatch OVENS



For development work
and new product testing,
Minn. Mining technicians
approve the wide tem-
perature range . . . vari-
ety of raw materials han-
dled . . . capacity for
large samples.

- Air velocity control
- Guaranteed heat elements — 2.7 to 36 KW
- Precision indicating control
- 8 models in wide range of capacities
- Accurate—speedy—rugged

Manufacturers of Ovens
for all purposes



Minnesota Mining & Manufacturing Company uses Despatch "V" Ovens in research and control of "3M" products and applications. Users of Despatch Ovens from its earliest days, this well-known company now has scores of them in its various departments. For information on how Despatch can be put to work on your laboratory and production problems, write for Bulletin No. 107.

343 Despatch Building
Minneapolis 14, Minnesota

When inquiring check CP 4162 on handy form, pgs. 2-3

Wallace & Tiernan MASSOMETER



FOR METERING
FREE FLOWING
SOLID MATERIALS

Pneumatic
Recording
•
Maximum
Capacity
225 lb. per min.
•
Accuracy ± 1%
•
Overall Height—24½ in.

M-28

Write today for Description

WALLACE & TIERNAN
COMPANY INC.
25 MAIN STREET. BELLEVILLE 9, N.J.

When inquiring check CP 4163 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Frequency standard provides accurate master reference point for many uses . . .

needs only small amounts of power for operation

Uses: Provides a source of known frequency to be used as a master reference point or laboratory standard. Can be used to control precisely the oscillations of a vacuum tube circuit.

Features: Unit is reported to provide a high order of frequency stability over the temperature range from minus 20 to plus 75°C. Manufacturer claims that stock models provide a single precise frequency of 60 cycles or 100 cycles with a tuning accuracy of plus or minus 0.003%.

Description: Designed to be used as reference standards for all measurements of either frequency or time, the Cenco-Riverbank Frequency Standards are housed in a 22 x 15½ x 11" cabinet which is ventilated for the purpose of dissipating undesirable heat. The front panel of this cabinet can be detached and the entire unit can be mounted into a standard rack mounting where a space of 8¾ x 19" is available.

Since only small amounts of power are required to operate the unit, an amplifier may be employed to obtain sufficient voltage and power to run synchronous decodes. Unit has complete control over the circuit output frequency. Variations in line frequency have no effect upon the output frequency.

(Products of Central Scientific Co., Dept. CP, 1700 Irving Park Rd., Chicago 13, Ill. . . . or for more information check CP 4164 on form, pgs. 2-3.)

Alpha-emitting unit neutralizes static electricity on many laboratory instruments

Uses: Where presence of, or generation of, static electricity in laboratory instruments, such as microbalances and similar apparatus, interferes with accurate measurements or handling of materials or specimens. Useful where determinations of the effect of gas ionization upon electronic circuits are being made.

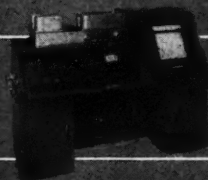
Features: Alpha-emitting unit neutralizes all static electricity when brought into close proximity to instrument bearing this charge.

Description: Staticmaster Utility Unit consists of an extra powerful strip of Polonium in a stainless steel housing. Tips are attached to the housing for convenience in mounting this unit in a fixed position or for placing on any desired handle or rod so that it becomes a wand. The unit is 2¾" long without mounting tips, weighs 11 gm and is made of type 430 stainless steel. It provides an ionization equivalent of 125 microcuries at time of shipment.

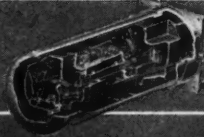
(Product of Nuclear Products Co., Dept. CP, 10173 E. Rush St., El Monte, Calif. . . . or for more information check CP 4165 on form, pgs. 2-3.)

**FACTS
ON
INFRARED
FOR THE
PROCESS PLANT**

THE ONLY COMPLETE RANGE OF INFRARED INSTRUMENTS TO MEET ALL REQUIREMENTS



FOR THE PILOT PLANT—Model 14 Multi-Component Analyzer—
Continuously records the concentration of up to six components in a pilot process stream on a six-minute cycle. Ideal for tracking the effects of temperature, pressure, etc., changes in a pilot stream.



FOR THE PROCESS PLANT—Model 93 BICHROMATOR® Analyzer—
For continuous control of liquid or gas streams. Records the ratio of any two wavelengths chosen. Thermostatted, enclosed in explosion-proof containers.



FOR THE PROCESS PLANT—Model 105 TRI-NON® Analyzer—
Highly stable and sensitive. Suitable where there is considerable interference from stream components. Thermostatted, enclosed in explosion-proof containers.

Please send the bulletin checked

Model 14..... Models 93 and 105.....

NAME.....

TITLE.....

COMPANY.....

ADDRESS.....

The Perkin-Elmer Corporation, 816 Main Avenue, Norwalk, Conn.
Southern Regional Office: New Orleans, Louisiana

For Optical Design and Electro-Optical Instruments
PERKIN ELMER

When inquiring check CP 4166 on handy form, pgs. 2-3

*Which costs more...
waste product?
or infrared analyzers?*

Infrared analyzers are expensive, but sub-standard products can be even more costly. You can nip waste production runs in the bud by monitoring your process stream with infrared analyzers. Significant changes in stream composition can be detected immediately, in time to prevent off-quality material. Once installed, the instruments pay for themselves in a few weeks of operation.

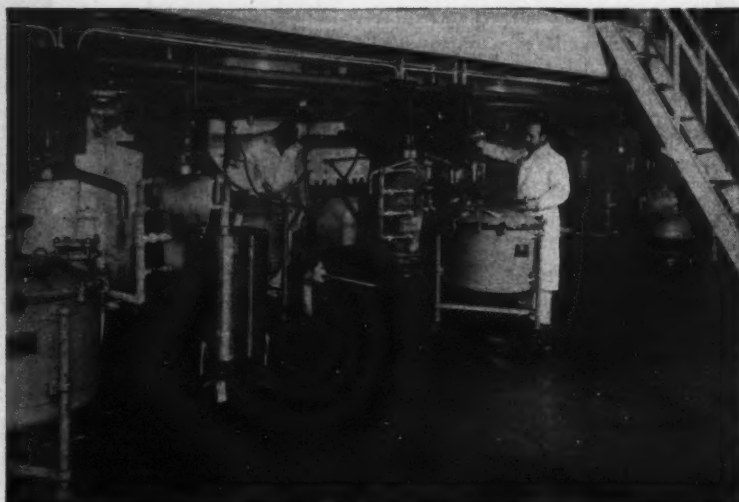
Among commercially available instruments, Perkin-Elmer's TRI-NON and BICHROMATOR Analyzers are probably the most expensive—and with good reason. They are based on unique optical principles that permit greater sensitivity and wider application than other analyzers. They are engineered to operate for long periods under difficult plant conditions. Perkin-Elmer's unique "unitized" construction permits easy servicing and prompt replacement of defective components. The BICHROMATOR and TRI-NON Analyzers are completely sensitized and adjusted to meet your specific process stream problems before leaving our plant. And, most important, they are backed by Perkin-Elmer—an organization with more experience in infrared instrumentation than any other in the world.

Full particulars on our infrared process control analyzers and services are yours for the asking. Fill in the coupon below.

*Trademark The Perkin-Elmer Corporation

BLOOD FRACTIONS = LIFE

Photo courtesy of Armour and Company



Gamma globulin is but one of many human blood fractions being mass-produced today in Sharples Centrifuges developed exclusively for this exacting service. Centrifugal separation of the various blood components and plasma proteins is accomplished with a centrifugal force of over 13,200 x gravity, the highest commercial centrifugal force available.

Great care has been taken in the design of these blood centrifuges to eliminate product contamination; to maintain any desired temperature in the range of -23°F to 0°F ; to permit easy quick cleaning and sterilizing of the machine; to effect continuous high yield separation of the valuable solid and liquid phases.

The Sharples Corporation is proud to have engineered the centrifuge which meets the critical demands of the blood fractionation program. Over 60 centrifuges of this type are now in operation in plants throughout the country.



SHARPLES

THE SHARPLES CORPORATION • 2300 WESTMORELAND ST. • PHILA. 40, PA.
NEW YORK • PITTSBURGH • CLEVELAND • DETROIT • CHICAGO
NEW ORLEANS • SEATTLE • LOS ANGELES • SAN FRANCISCO • HOUSTON

Associated Companies and Representatives throughout the World

When inquiring check CP 4167 on handy form, pgs. 2-3

FOR THE LABORATORY

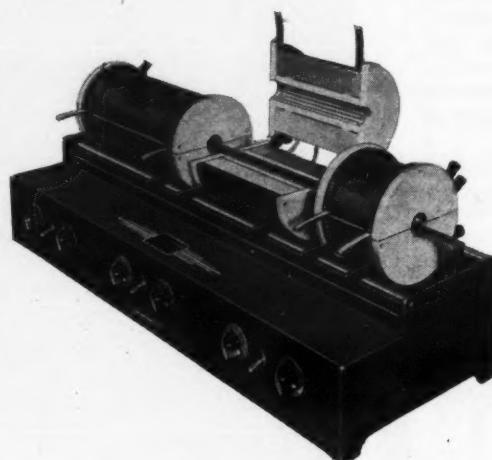
Three furnaces mounted on rails can be used as one . . .

each organic combustion tube unit has separate temperature control

Uses: For carbon determinations and other laboratory research which require temperatures up to 1900 degrees Fahrenheit.

Features: Three separate furnaces mounted on rails enables operator to use them as one complete unit or as three separate units. Each has individual temperature control. Tap-changing transformer with 36 steps of temperature control for each section is mounted on base.

Description: Furnace assembly consists of individual furnace sections and a base containing control transformers, on-off switches, and guide rods on



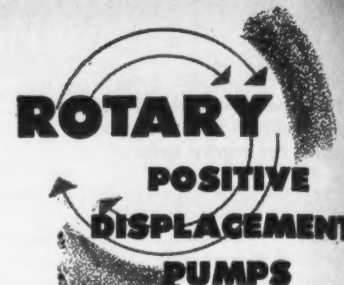
Tap-changing transformer on base has 36 steps of temperature control for each section

which furnace sections are mounted. Base is enclosed to prevent accidental contact with terminals or other live parts.

End frames of each furnace section are formed with guides that engage guide rods of base so that all sections are held in correct alignment and will not become dislodged either when sections are moved laterally or are opened. Upper half of sections are hinged to lower halves so that they may be opened at any time for observation without shutting off power.

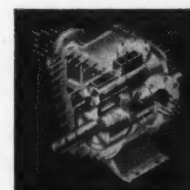
Standard furnaces are available for either 115 v or 230 v, but since temperature control is obtained through tap-changing transformers, they can be used on 50/60 cycles AC only. The 115 v furnaces will operate satisfactorily on 110 to 120 v, while 230 v units may be used on 220 to 240 v. Furnace for other voltages, up to a maximum of 250 v, can be supplied. Where only DC is available, either 115 v or 230 v, rheostats can be substituted for the transformers for temperature control.

There are two heating units in each furnace — each unit consisting of a coiled wire wound through undercut grooves of semi-cylindrical refractories.



When liquids must be handled at fixed rates of flow, it pays to install a Kinney Rotary Liquid Pump. These are furnished in two basic designs — the famous Model SD Rotating Plunger Pump and the unique Model HQ Heliquad Rotary Pump. Each design has specific advantages which make it the "pump of choice" for certain services. For instance, in barge and tanker

service, the Kinney Model HQ Pump has the unusual ability of handling all viscosities from gasoline to heavy molasses. For handling viscous materials such as asphalt, grease, soap, etc., the Kinney Model SD is the outstanding favorite.



Kinney SD Rotating Plunger Pump.



Kinney Model HQ Heliquad Rotary Pump.

Kinney Manufacturing Co., manufacturers of liquid and vacuum pumps. Representatives throughout the United States and in foreign countries.

For Bulletin LS1 describing Kinney Rotary Liquid Pumps, write Kinney Manufacturing Co., 3573 Washington Street, Boston 30, Mass.



See us at the Chemical Show

Booth #950
Convention Hall
Philadelphia
November 30 — December 5

When inquiring check CP 4168 on handy form, pgs. 2-3

CHEMICAL PROCESSING

FOR THE LABORATORY

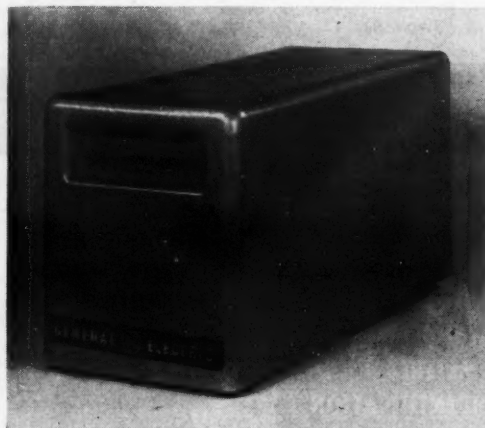
Both units in each furnace are interchangeable and are easily replaceable by operator.

(Multiple Unit Furnaces are products of Hevi Duty Electric Co., Dept. CP, 4150 Highland Ave., Milwaukee 1, Wisconsin . . . or for more information about this development, reader may simply check CP 4169 on handy form, pages 2 and 3.)

Higher magnetic field strengths allow portable galvanometers to measure low currents . . .

entire coil and suspension element are designed for easy removal and replacement

Uses: Applications for unit include temporary or permanent installation for testing of instruments, materials and many types of apparatus. May also be used with bridges and other devices which require an external galvanometer.



Redesigned portable galvanometers are useful for measuring low values of current or voltage

Features: Units are designed so that the entire coil and suspension element can be removed from the magnetic assembly and replaced by another system of different sensitivity, without the necessity of remagnetizing or disturbing external connections.

Description: The complete line of high-sensitivity portable galvanometers incorporates Alnico magnets which, according to manufacturer, give a field of more than twice the strength obtainable with chrome-steel magnets heretofore used. In addition, a tilted scale with hairline index and spotlight allows readings to be taken quickly and accurately. Galvanometer element and optical system are mounted in a lightweight metal case approximately $6\frac{1}{2} \times 8 \times 16$ ", which is shock-mounted to eliminate vibration effect.

(Manufactured by General Electric Co., Dept. CP, One River Rd., Schenectady 5, N. Y. . . . or for more information check CP 4170 on handy form, pages 2 and 3.)

DUST DISAPPEARS LIKE MAGIC!

A little air (50 cfm), proper hooding and the right ROTO-CLONE Dust Collector can do the trick—ECONOMICALLY



NOW YOU SEE IT!

Grinding operation before dust control.



NOW YOU DON'T!

Grinding operation after dust control.

Are you conveying, screening, grinding (as above), weighing or packing dry materials? Then the picture at the left may be familiar. Dust "dogs your footsteps" everywhere!

Now, look at the scene at right. Everything clean and serene! Good exhaust hood-design reduced needed air volume to a minimum—50 cfm—making it inexpensive and practical to apply efficient dust control. Resulting benefits? You know them well—improved working conditions, reduced housekeeping and equipment maintenance costs.

AAF's more than 20 years' experience covers the entire range of industrial dust control problems—has resulted in today's complete line of ROTO-CLONE* Dust Collectors. Whether your dust problem involves a single machine, a complete department or an entire plant operation, this experience can point the way to "short cuts", economies—and results. For complete information, call your local AAF representative or write us direct.

*ROTO-CLONE is the trade-mark (Reg. U. S. Pat. Off.) of the American Air Filter Company, Inc., for various dust collectors of the dynamic precipitator and hydro-static precipitator types.



American Air Filter

COMPANY, INC.

258 Central Avenue, Louisville 8, Kentucky • American Air Filter of Canada, Ltd., Montreal, P. Q.

When inquiring check CP 4171 on handy form, pgs. 2-3

Is Your Factory Starved for AIR?

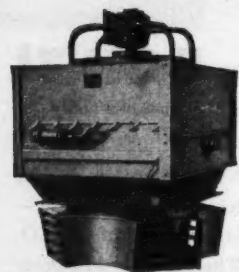


If this is what happens when you go from the office out into the shop, your plant is starved for air! The vacuum created by the operation of necessary exhaust equipment is usually responsible. While our pictures may be slightly overdrawn, something like that may be happening in your plant. Perhaps not so noticeably, for if your building is not new, the vacuum may be relieved by crevices, loose-fitting windows, open doors.

When that happens, your ventilating system, so painstakingly designed and installed to protect your employees and to increase production, can't work properly. And your heating system won't work properly because cold air is being drawn in through every crack and crevice and every opened door.

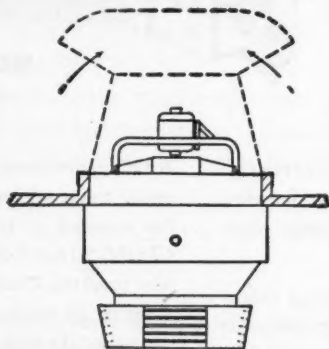
There is an easy solution. Install WING FRESH AIR SUPPLY HEATERS with Revolving Discharge Outlets. In winter they bring in fresh air through heating coils varied to just the right temperature, replacing exhausted air. In summer, with the steam turned off, they circulate the air in your plant, giving a cool, refreshing sensation to the workers and keeping production up to normal in stifling weather.

WING FRESH AIR SUPPLY HEATERS



WING Fresh Air Supply Unit with fan enclosed in casing.

(Right) WING Fresh Air Supply Unit with fan above roof line.

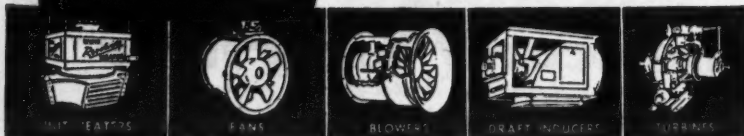


Write for Bulletin HVT-1 and learn the facts about fresh air make-up for your plant.

L.J. Wing Mfg. Co. Linden, N.J.
179 Vreeland Mills Road

Factories: Linden, N.J. & Montreal, Canada
In Europe: Etab. Wanson, Brussels, Belgium

Wing



When inquiring check CP 4172 on handy form, pgs. 2-3

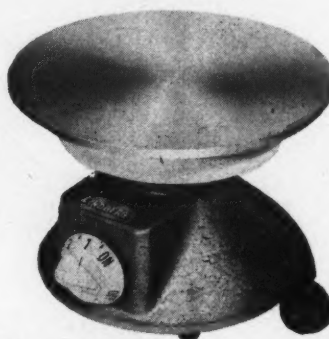
LABORATORY

Cast-in heating elements insure quicker heating on hot plate . . .

built for small volume work

Uses: Designed specifically for small volume laboratory hot plate work.

Features: Sheathed Nichrome heating elements are cast into the aluminum top plate insuring quicker heating — 750°F in 35 min — good uniformity, and exceptionally long element life.



Uses cast-in heating elements

Description: The Lindberg Pyrodisc has a diameter (top plate and base) of 8"; power rating of 660 w; power service of 115 v, 50/60 cycle. Stepless control permits precise control of temperature. Terminals are protected from spillage and short circuits.

(Product of Lindberg Engineering Co., Dept. CP, 2444 W. Hubbard St., Chicago 12, Ill. . . . or for more information check CP 4173 on handy form, pages 2 and 3.)

Balances and accessories illustrated in bulletin

Complete line of scales, balances, weights and accessories are listed in recently-revised bulletin. Included are trip scales; general laboratory balances; analytical, torsion, spring, specific gravity and special purpose balances.

Bul 15C is issued by Central Scientific Co., Dept. CP, 1700 Irving Park Rd., Chicago 13, Ill. When inquiring specify CP 4174 on handy form, pages 2 and 3.

SEND FOR CATALOG

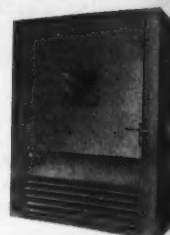


OVENS FOR INDUSTRY

Range Room Temperature to 600° F.

Temp. Diff. 5° F.

No. 1412



HOTPACK forced draft ovens permit large loads and quick treatment with each article receiving the same amount of heat.

These units are especially effective in baking, sterilizing, heat treating and conditioning, dehydrating and aging where uniform temperatures of heavy loads or large quantities are required.

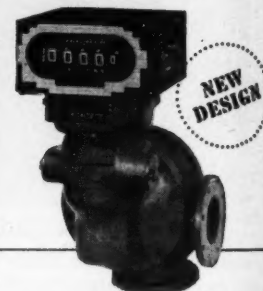
Capacities 12 cu. ft. to 250 cu. ft.

THE ELECTRIC *Hotpack* COMPANY, Inc.
5033 COTTMAN STREET, PHILADELPHIA 35, PA.

When inquiring check CP 4175 on handy form, pgs. 2-3

NOW you can have **METERED IDENTIFICATION** for

formula, inventory and cost controls



STAINLESS STEEL METER
Inside and Out

STOPS CORROSION PROBLEMS HANDLING FOODS, PHARMACEUTICALS, CHEMICALS, OTHER LIQUIDS

This new Rockwell Type 2BC Rotocycle meter is of all-stainless steel construction; corrosion-resistant, easy to clean. It provides accurate records of quantities of liquids handled which are so important in quality control, scheduling, cost accounting and tax analyses. Quantity Control Registers and Remote Registration Systems are available. Described in Bulletin OG-403. Write Rockwell Mfg. Co., Dept. A-5, Pittsburgh 8, Pa.

In Canada: Peacock Brothers Limited



You Can RELY ON ROCKWELL INDUSTRIAL METERS

When inquiring check CP 4176 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Self-contained portable kit
for ultramicro analysis**

Uses: With this kit, acidimetry and oxidimetry titrations, filtrations, precipitations, making-up of volumetric solutions, and all of the basic operations of ultramicro analysis can be performed.

Features: Contains all necessary apparatus arranged in the most convenient manner possible.

Description: Self-contained kit for all ordinary



Compact, portable kit for ultramicro analysis

drop-scale analysis is contained in a portable hardwood cabinet measuring 2 ft in height, 3 ft in width, and 18" deep. Unit has built-in electrical connections and 4 built-in hydro valves for air, gas, water and vacuum.

(Product of Microchemical Specialties Co., Dept. CP, 1834 University Ave., Berkeley 3, Calif. . . . or check CP 4177 on form, pgs. 2 & 3.)

**Luminescent materials provide
light sources for use up
to 25 microlamberts . . .**

tritium-activated sources available in 2 types

Uses: Provide light sources for use up to 25 microlamberts.

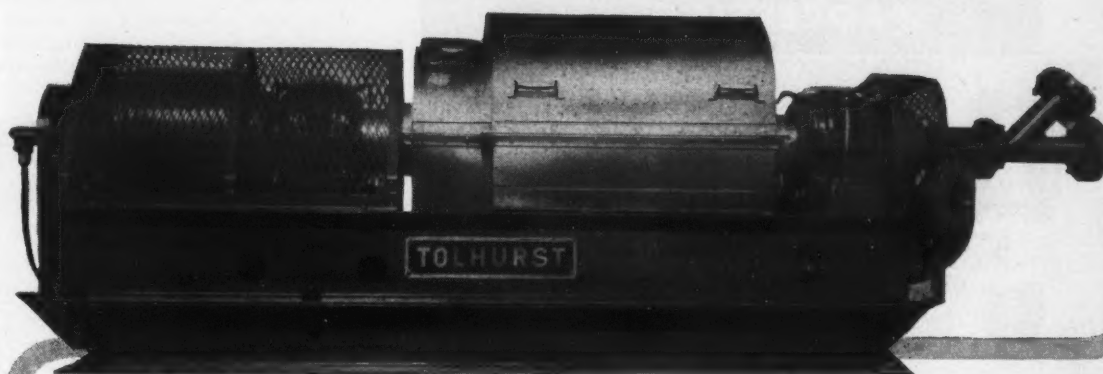
Features: Are available in a wide range of spectral emission characteristics.

Description: Two general types of tritium-activated light sources have been prepared. The first type consists of tritium-labeled organic fluorescent materials wherein an appreciable fraction of the normal atoms of hydrogen have been replaced with radioactive tritium, such as tritiated *trans*-stilbene. These organic phosphors have spectral emission characteristics of the molecule itself; provide a peak spectrum at 3800 Angstroms with some emission in the visible region.

The second type is tritium-activated phosphors in which a tritiated solid has been intimately mixed with an efficient phosphor, such as zinc sulfide. This type can be prepared to have spectral emission characteristics of any available phosphor with a maximum emission peak from about 4000 to about 7000 Angstroms, depending on the phosphor used.

(Developed by Tracerlab, Inc., Dept. CP, 130 High St., Boston 10, Mass. . . . or for more information check CP 4178 on handy form, pages 2 and 3.)

can this **NEW** **CONTINUOUS CENTRIFUGAL** *cut filtration costs for you?*



**NOW YOU CAN GET
A CONTINUOUS CENTRIFUGAL THAT PROVIDES . . .**

- 7 different pool depths
- Variable beach speeds from 0 to 300" per minute
- 2000 F x G
- Self-cleaning feed chambers

WHAT CAN THIS MEAN TO YOU?

FOR LONG RUNS ON A SINGLE PRODUCT If your plant runs continuously on a single product, process fluctuations or changes in processing technique need no longer be a problem. The Vari-Beach Drive permits beach speed to be changed instantly, from 0 to 300 inches per minute. Seven different pool depths are available by a simple adjustment of the Vari-Pool Orifice Plates. An available force of 2000 times gravity assures maximum settling rate. This flexibility can mean maximum efficiency in your centrifuging step.

FOR SHORT RUNS ON DIFFERENT PRODUCTS Per-

haps your plant runs for awhile on one product, then changes over to another product. Now, for the first time, you can enjoy the advantages of continuous centrifuging. When you change from one product to another, you simply adjust beach speed and pool depth by means of the Vari-Beach Drive and Vari-Pool Orifice Plates and you're ready for the new run. Self-cleaning feed chambers minimize down time when changing products.

FIELD TEST UNITS Ask for details on Tolhurst Continuous Centrifugal available for a 90-day test in your plant.

Tolhurst CENTRIFUGALS

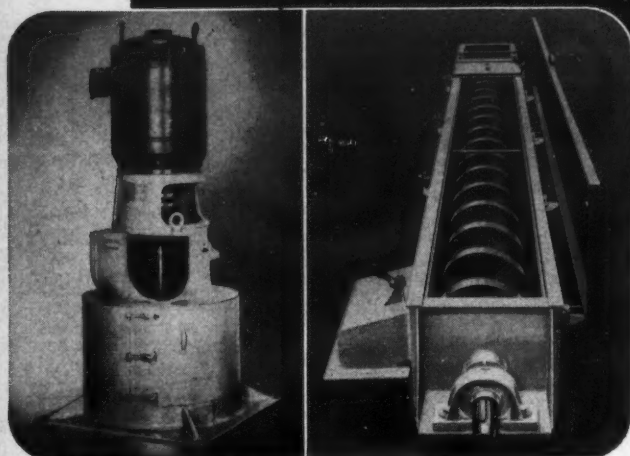
Division of
AMERICAN MACHINE AND METALS, INC.
EAST MOLINE, ILLINOIS

When inquiring check CP 4179 on handy form, pgs. 2-3



We invite you to...

prove for yourself
how *Rietz* equipment
can improve your
PROCESSING



TEST your process in our laboratories, at our expense. If your process requires size reduction or mixing, send samples of your product, with your requirements, for testing on **Rietz Disintegrators**.

Where continuous heating, cooking, cooling, mixing, braising, boiling, or blanching are required, we test your product for you in modern **Rietz Thermascrows**.

These tests can save you money!

Hundreds of processors have profited from special tests in our laboratories, before installing their own process lines. We urge you to write today: we're anxious to have you prove for yourself that Rietz equipment can do an effective job in your plant!

Write to Development Division

Rietz

**MANUFACTURING
COMPANY**

Santa Rosa • California

When inquiring check CP 4180 on handy form, pgs. 2-3

FOR THE LABORATORY

**Multi-range test chambers
produce temps as low
as minus 130°F...**

or as high as plus 200°F

Uses: Environmental testing in temperature range from minus 130 to plus 200°F and humidity cycle of 20 to 95 per cent from plus 35 to 185°F.

Features: Made in five sizes with test space capacity from 4 to 36 cu ft.

Description: The Murphy-Miller multi-range, all-purpose test chamber has a high capacity, low velocity forced air circulation system provided by a fan whose motor is mounted outside the cold



Provides humidity testing over a wide temperature range and humidity cycle

test space. This arrangement reduces temperature variation in all parts of the test space to an absolute minimum. Standard equipment includes an electric defrost system complete with safety controls which prevents condensation on products being tested by increasing their temperature to ambient before removal from the test space.

(Manufactured by Murphy & Miller, Inc., Dept. CP, 1326 S. Michigan Ave., Chicago, Ill. ... or check CP 4181 on handy form, pgs. 2 & 3.)

**Larger compressors permit
operation of cabinets
at minus 95°F...**

units are available in 3, 6, and 9 cu ft sizes

Uses: Environmental testing of equipment or materials for conformance with military specifications and for such applications as shrink fitting, pre-drying preparation of biologicals.

**BIG
NEWS**
for paint & lacquer
manufacturers!

The *Cowles*



★ **Speeds Resin Cutting**

Natural resins, synthetic resins, pigment chips go into solution faster with the Cowles Dissolver!

★ **Speeds Pre-Mixing**

The Cowles Dissolver pre-mixes pigments in vehicles, producing a fast, smooth mix that's ready for further milling or fine grinding. Because it accomplishes some grinding, it enables certain grades of paint to be prepared in one operation.

★ **Speeds Shading**

No slow-down on shading operations with the Cowles Dissolver! Paint can be sent out for sampling, corrected and ready for a second check in less time than previously required. More than one batch can be placed under the machine ready for agitation as soon as checks are complete.

THE COWLES DISSOLVER actually dissolves and disperses 2 to 20 times faster in the same space ordinary mixers require. Learn how this high-speed unit can save you time and labor — improve your product and yield per batch.

SEND FOR latest Cowles catalog

THE COWLES COMPANY, INC.
113 Trackside, Cayuga, N.Y.

Please send me your latest Cowles Dissolver Catalog.

NAME _____
COMPANY _____
STREET _____
CITY AND STATE _____

When inquiring check CP 4182 on handy form, pgs. 2-3

CHEMICAL PROCESSING

FOR THE LABORATORY



Three cubic foot model operates down to -95°F

Features: Equipped with larger refrigeration compressors to provide operation to minus 70 and minus 95°F . Semi-hermetic refrigeration compressors operating in cascade use Freon-12 and Freon-22 refrigerant to provide adjustable control within 2°F of a set point.

Description: Available in 3, 6, and 9 cu ft sizes, units have interior chamber cross-sectional dimensions standardized at 17" wide by 22" high for all models. Interior lengths vary between 15, 30, and 44" for the three sizes.

Inclined control panel at rear of the work-top area allows convenient operation and observation of pressure and temperature controls and indicators. Standard unit is equipped with a liquid-tight stainless steel interior and a "finger-tip" counterbalanced lid.

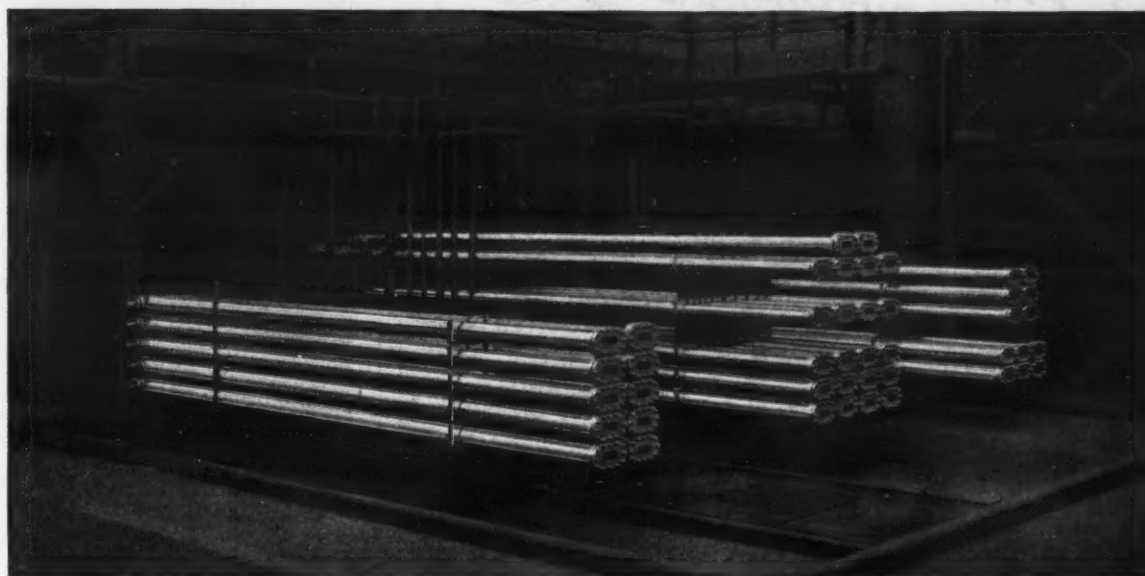
(Manufactured by the Hudson Bay Div., Refrigeration Systems, Inc., Dept. CP, 646 W. Washington Blvd., Chicago 6, Ill. . . . or for more information check CP 4183 on handy form, pages 2 & 3.)

Photographing cathode-ray patterns discussed in factual manual

Thirty-six-page manual is a complete review of the problems and associated solutions encountered in photographing cathode-ray patterns. Illustrated with actual photo-recordings, scales, graphs and diagrammatic sketches, manual contains complete descriptions and specifications of a line of photo-recording equipment.

"Techniques of Photo-recording from Cathode-ray Tubes," 3rd edition, is available on letterhead request from Allen B. DuMont Laboratories, Inc., Dept. CP, 760 Bloomfield Ave., Clifton, N.J.

Reduce Parts Inventories in your plant with



BROWN FINTUBE *Sectional* HEAT EXCHANGERS

● When you install different types and sizes of specially designed, single purpose, heat exchangers in your plant, you have to buy separate sets of parts for each exchanger. These parts are costly; and there is the added expense of handling, and storing them.

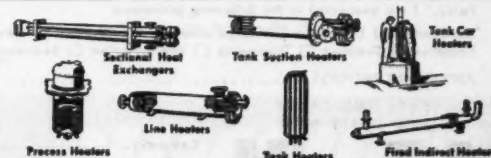
Unlike these fixed, specially built units, Brown Fintube heat exchangers consist of **Standard Sections** connected in proper series and parallel arrangement. Thus, only a small supply of parts are needed.

In the plant shown above, for example — different groups of Brown Fintube Standard Sections are handling 6 different heat transferring duties — and just a small handful of inexpensive parts serves as adequate stores for all 44 sections. In some cases Brown Fintube Standard Sections have reduced parts inventories by as much as 82%.

Reducing inventories is only one of Brown Fintube's many advantages. Our Bulletin 512 gives full details. Send for a copy. We can really save you money!



**BROWN
FINTUBE CO.**
Elyria, Ohio



NEW YORK • BOSTON • PHILADELPHIA • PITTSBURGH • BUFFALO • CLEVELAND • CINCINNATI • DETROIT • CHICAGO • ST. PAUL • ST. LOUIS • KANSAS CITY
MEMPHIS • BIRMINGHAM • NEW ORLEANS • SHREVEPORT • TULSA • HOUSTON • DALLAS • DENVER • LOS ANGELES • SAN FRANCISCO • and ST. THOMAS, ONT.

When inquiring check CP 4184 on handy form, pgs. 2-3

MY CRYSTAL-GAZING PAID OFF WITH THIS CENTRIFUGAL

AN **A.T.&M.**
SUCCESS STORY BY
SAM SPINNER



I'M USING OVEN HEAT
AS WELL AS CENTRIFUGING
TO DRY THESE
CRYSTALS, SAM.
AND THAT OVEN
DRYING'S A REAL
BOTTLENECK!

YOU'VE
GOT THE
WRONG
CENTRIFUGAL,
JOE

OUR NEW **HIGH SPEED**
CENTRIFUGAL IS THE
JOB FOR YOU. ITS
FASTER BASKET
SPEED SPINS THE
CRYSTALS NEARLY DRY...
CUTS DOWN ON THE
OVEN'S WORK



LATER
WHAT A
DIFFERENCE! THAT
HIGH SPEED CENTRIFUGAL
REDUCES CRYSTAL
MOISTURE TO 1%—
THE OLD ONE COULDN'T
DO BETTER THAN 6%

BET THAT SAVES
YOU
MONEY

MONEY? WE'LL
SAVE \$30,000
THIS YEAR ALONE!
I REALLY OWE IT
TO **AT&M**



FREE
ILLUSTRATED
BOOKLET

AMERICAN TOOL & MACHINE COMPANY
1412 Hyde Park Avenue, Boston 36, Mass.

Please send me my free copy of the new AT&M booklet "Centrifugal Force." I am interested in the following processes:

Separation ☐ Extraction ☐ Dehydration ☐ Clarification ☐ Coating ☐
Filtration ☐ Draining ☐ Thickening ☐ Impregnation ☐ Sedimentation ☐

ANY OTHER PROCESS.....

SAVE TIME, SPACE
AND COSTS WITH

A.T. and M.
CENTRIFUGING

Name.....Title.....
Company.....
Street.....
City.....Zone.....State.....

When inquiring check CP 4185 on handy form, pgs. 2-3

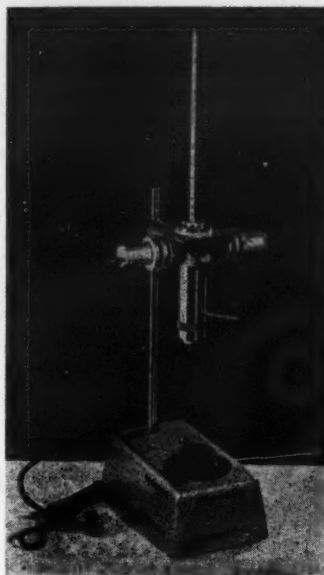
LABORATORY

Melting point apparatus
uses reflected light
for better viewing...

reads directly to 0.2°C

Uses: Melting point determi-
nations on organic and inorganic
substances.

Features: A tri-part lighting
system, cooling jacket and a step-
less heat control.



Incorporates cooling jacket for
speeding melting point deter-
minations

Description: The Melt-Meter
heats a sample uniformly on all
sides in a covered well. Manu-
facturer reports that this elimi-
nates the errors inherent in ap-
paratus where only one side of
the sample is heated. Precision
thermometers supplied with unit
permit melting point to be read
directly to 0.2°C without inter-
polation.

The reflected lighting system il-
luminates sample on three sides
against a background of soft
diffused light. This gives a stereo-
scopic effect which makes the
sample appear as though in relief.

Cooling jacket surrounds the
melting block and allows com-
pressed air to be circulated about
the block for cooling purposes
where several determinations are
to be made in sequence.

(Product of National Instrument

1000 GALLONS
DEIONIZED WATER **18c***
(equivalent to distilled water)
*Based on 10 grain water

Elgin Ultra-Deionizer

Mineral impurities in water used for processing can cost a
lot of money in rejects and inferior product quality. Objec-
tionable spots on product surfaces following rinsing and
drying is one example. Unwanted minerals left in chemicals
and pharmaceuticals is another. Troubles encountered in
countless processes can be traced directly to the mineral
impurities in water.

The Elgin Ultra-Deionizer will eliminate such water
troubles at a cost any plant can afford. It will produce large
quantities of mineral-free water, of even higher quality than
that obtained by distillation or evaporation — and at a mere
fraction of the cost. Being a compact, simple-to-operate unit
containing a mixture of cation and anion exchanging resins
in a single tank it is low in investment and operating costs.
That's why plants using two and four column demineralizers
are replacing such equipment with the dependable new Elgin
Ultra-Deionizer.

Let us have our nearest representative show
you how it can eliminate rejects and improve
product quality in your plant — or ask for Bulletin
512.

Write today for complete data

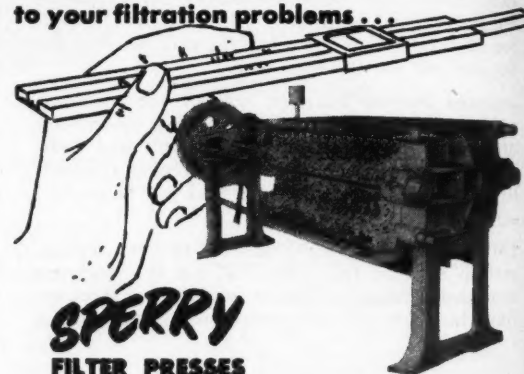
ELGIN SOFTENER CORPORATION

180 N. Grove Avenue, Elgin, Illinois

WATER CONDITIONING FOR EVERY NEED

When inquiring check CP 4186 on handy form, pgs. 2-3

for the exacting answers
to your filtration problems...



SPERRY
FILTER PRESSES

When you consider the many advantages of Sperry
Filter Presses, you can quickly understand why
hundreds of manufacturers throughout the country
depend on Sperry for solving industrial filtration
problems of every kind.

Sperry Filter Presses offer greater economy — low
first cost, minimum maintenance and long life...
require less floor space... handle any kind of filter-
able mixture... and use practically any kind of filter
material. For the complete story, ask for the big free
Sperry catalog.

D. R. SPERRY & CO., BATAVIA, ILLINOIS
Filtration Engineers for More Than 60 Years

Eastern Sales Representative: George Taylor,
808 Hagerman Ave.,
Yonkers 3, N. Y.
Western Sales Representative: R. M. Pittsley,
585 Marchmont Building
San Francisco 4, California
DO 2-6875

When inquiring check CP 4187 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Run
d-c Motors
from
a-c Lines
with the
Variac Motor Speed Control

4 MODELS
1 15th hp or less to 3.4 hp
COMPLETE Speed Variation
from Zero to 15% Above Rated
Extremely FAST
Start-Stop-Reverse
High Starting Torque

No Vacuum Tubes
No Warm-up Required
Perfectly Smooth Control
Even at Lowest Speeds
Small Enough to be
Mounted Right at Machine
Very Simple to Install—
Easy to Maintain
Prices from \$75

Write for the G-R Motor Control Bulletin

GENERAL RADIO Company
275 Massachusetts Ave.
Cambridge 39, Mass.
90 West St. NEW YORK 6 920 South Michigan Ave. CHICAGO 5
1000 North Seward St. LOS ANGELES 38

When inquiring check CP 4188 on handy form, pgs. 2-3

Durably Built for Heavy Service!

"Metalsmiths"
Stainless Steel
and Monel
Utensils

Prompt shipment
—anywhere!

"Metalsmiths" corrosion-resistant utensils are sturdy, well-designed, long-wearing. Standard in process industries for over 30 years. All items shown, plus beakers, stock pots, bath cans and shovels in stock for prompt shipment.



WRITE FOR LATEST CATALOG — PRICE LIST

METALSMITHS
Division of Orange Roller Bearing Co., Inc.
556 White Street Orange, N. J.

When inquiring check CP 4189 on handy form, pgs. 2-3

OCTOBER, 1953

LABORATORY

Co., Dept. CP, 5005 Queensbury Ave., Baltimore 15, Md. . . or check CP 4190 on pgs. 2 & 3.)

**Versatile laboratory mixer
simulates mortar and
pestle action . . .**

gives small scale duplication
of production mixing

Uses: Designed to provide laboratories and pilot plants with a working duplication of production mixing so that they may establish mixing standards or check quality and efficiency.

Features: Rubbing, kneading, smearing action of the well-known mortar and pestle is duplicated by the revolving mullers and plows. Spring-loaded mullers can be adjusted to exert pressures from 30 to 80 lb to meet a range of laboratory mixing requirements.

Description: The Simpson "LF" Mix-Muller may be easily adapted for heating or cooling while mixing and can be furnished in stainless steel or other special metals.



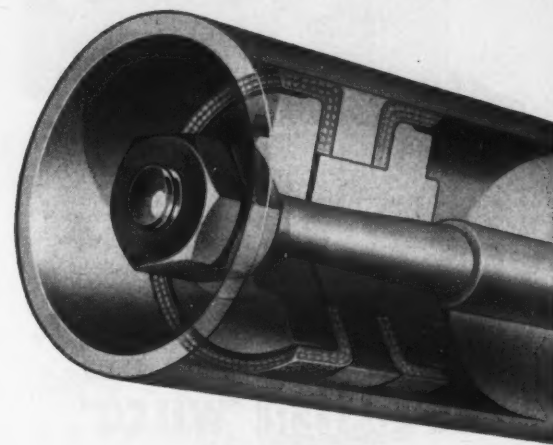
Gives mortar and pestle mixing action in a laboratory-scale unit

The unit is provided with a V-belt drive for flexible operation, a funnel that directs liquid additions directly to the material bed, and a leakproof discharge door to provide quick discharge of batch.

(Mixer is manufactured by Simpson Mix-Muller Div., National Engineering Co., Dept. CP, 624 Machinery Hall Bldg., Chicago 24, Ill. . . or for more information check CP 4191 on pgs. 2 & 3.)

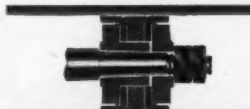
DARCOVA PUMCUPS

more efficient...job after job!

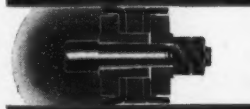


Phantom cutaway showing a typical Pumcup piston assembly.

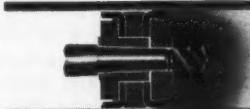
DIAGRAM OF DARCOVA PUMCUP ACTION (greatly exaggerated)



NORMAL: BOTH PUMCUPS RELAXED



UNDER PRESSURE: PUMCUPS SEAL AGAINST CYLINDER DESPITE WEAR, MINIMIZING SLIPPAGE



NO matter how tough your pumping problem Darcova Pumcups can help solve it . . . this has been proved in thousands of plants year after year.

Darcova Pumcup Advantages

1. Texture engineering that not only increases volumetric efficiency, but keeps it high with no appreciable fluid slippage for the entire life of the Pumcups.
2. Darcova Composition Pumcups give many times the life of other types of piston packing . . . at least 3 to 1!
3. Standard or special compositions are available for exceptional stability in handling almost any fluid . . . strong acids, alkalies, food products and even troublesome petroleum derivatives.

Send For Free Bulletin—Ask for Bulletin No. 4401 on Pumcups for reciprocating pumps; Bulletin No. 4502 on Pumcups for air and hydraulic mechanisms. Address . . .

DARLING VALVE & MANUFACTURING CO.

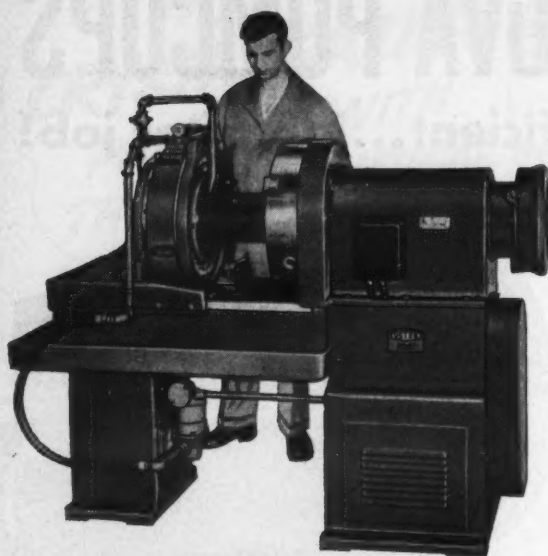
Williamsport 4, Pa.



THE ORIGINAL COMPOSITION CUP

PUMCUPS

When inquiring check CP 4192 on handy form, pgs. 2-3



THE **OSTER** "WILCO" IS FAST AND FLEXIBLE It threads a wide range of pipe without die-head change

MAINTENANCE threading can be a headache. You get a 4" pipe, a 2" bolt, a 6" pipe . . . different sizes, different lengths. But there's a cure for maintenance threading headaches . . . the Oster "Wilco" . . . a machine that gives you speed and flexibility at a price that's easy-on-the-budget.

You can change pipe and bolt sizes in seconds with an Oster "Wilco" because just one die-head handles them all. You thread pieces as short as 8" without a nipple chuck because the Oster "Wilco" front jaws are offset to take them. Regardless of the pipe or bolt size, the Oster "Wilco" threads and cuts off at the right speed because of its two speed motor. The Oster "Wilco" threads 4" pipe in 56 seconds and cuts it off twice as fast; it threads 1" pipe in 12 seconds.

The Oster "Wilco" is flexible, efficient, and fast. Its price is moderate . . . it's the one real answer to high quality, low cost maintenance threading.

OSTER Your Oster Distributor can help you solve your pipe threading problems. He offers sound recommendations, speedy delivery, and dependable service . . . and he stands behind the products he sells. Contact him for money saving facts, or if you don't know who he is, write us for his name and address and a free factual booklet about the Oster "Wilco".



THE **OSTER MANUFACTURING CO.**
Main Office and Factory:
2032 East 61st St. • Cleveland 3, Ohio

1953 • CELEBRATING 60 Years Leadership in the Threading Industry • 1953

When inquiring check CP 4193 on handy form, pgs. 2-3

Expanding Chemical Production



30 million lb of styrene annually is goal of production hike

Monsanto Chemical Company plans on increasing production capacity of its Springfield, Mass., plant to 30 million lb annually. New facilities are expected to be in operation shortly after the first of next year.

The firm is also building an engineering research laboratory at its plant in Nitro, W. Va., to explore the fields of rubber and agricultural chemicals, oil additives and synthetic detergents. The structure is expected to be completed by mid-1954.

Plan research laboratory for salt, construction scheduled soon

Morton Salt Company, Chicago, will begin construction this Fall on a new research laboratory at Woodstock, Ill.

The installation, which will be completed in the summer of next year, will house the company's principal research activities in the fields of inorganic, organic and catalytic chemistry.

Ground breaking starts \$6 million plant for polyvinyl chloride output

General Tire & Rubber Co. is now building a \$6 million plant at Ashtabula, Ohio for manufacture of polyvinyl chloride.

Dedicate \$2.6 million center for Dow Chem research

A \$2.6 million research center at Freeport, Texas has recently been dedicated by Dow Chemical. With 69,000 sq ft of space, the new facilities house the Texas Division's organic, chemical engineering and electrochemical research as well as the analytical laboratory. It also includes research and administrative offices, a patent office and a library.

H₂SO₄ expansion sees two plants for Allied Chemical & Dye

Second major expansion in production of sulfuric acid has been announced recently by the General Chemical Div., Allied Chemical & Dye Corp. with the disclosure of plans to build a large sulfuric

acid plant at Painesville, Ohio. Construction of another acid plant has already begun at Baton Rouge, La.

The new plant, which will produce acid by the contact process, is scheduled for operation late this year and will be built on a 50-acre tract.

Begin new acrylonitrile plant — 24 million lb yearly

Construction is now underway on an \$8.5 million acrylonitrile plant at Calvert City, Ky., for the B. F. Goodrich Chemical Company. When completed in the fall of next year, the new plant will have an annual capacity of 24 million lb of the liquid monomer used in making oil-resistant rubber, plastics, fibers, soil conditioners and other chemical products.

The new facility is adjacent to a \$6 million vinyl chloride monomer plant recently opened by the company.

Ammonia supply will get a lift from new facilities

Columbia-Southern Chemical Corp., Pittsburgh, Pa., will enter the ammonia production field with a new plant now being built at Natrium, W. Va. Production is expected by late 1954.

Expand hydrocarbon facilities with two new units

A \$2 million expansion program at two plants manufacturing fluorinated hydrocarbon compounds for the refrigeration and aerosol industries has been announced by the Du Pont Company.

Major part of the new facilities is a new plant slated for production next April at Deepwater Point, N.J. Another plant, at East Chicago, Ind., is currently slated for completion within the next month or so.

New fertilizer producing unit will be on-line shortly

A complete fertilizer plant at Cairo, Ohio, will reach its final construction stages within the very near future, it is announced by the American Agriculture Chemical Company, New York.

**Titanium dioxide plant in Georgia
takes \$14 million outlay**

American Cyanamid Company's Calco Chemical Division is building a \$14 million titanium dioxide plant on the outskirts of Savannah, Georgia.

The new plant, expected to be completed early in 1955, will be on a 1600-acre site and is Calco's third facility for production of titanium dioxide.

**Form new company in New York
to produce hydrazine**

Formation of the Matholin Corp. to manufacture, sell and conduct research on hydrazine has been announced jointly by Olin Industries, Inc., and Mathieson Chemical Corp.

The new company will be owned equally by Olin and Mathieson and will acquire first commercial-scale hydrazine plant recently completed by Mathieson at Lake Charles, La., and which is also the first major source of hydrazine in the U.S.

**Insecticide production facilities
reach full scale output**

Full scale production, of allethrin, a synthetic insecticide material, has been announced for the Baltimore, Md. plant of U.S. Industrial Chemicals Co., Div. of National Distillers Products Corp.

**Open first Canadian carbon black plant,
expect 25 million lb annually**

Canada's first oil furnace carbon black plant is now in operation at Sarnia, Ont.

Representing a \$3 million investment and operated by Cabot Carbon of Canada, Ltd., the new plant is expected to produce annually 25 million lb of the material for the rubber industry. Godfrey L. Cabot, Inc., Boston, Mass., is the parent company.

**Plant construction gets underway
for new petro catalyst**

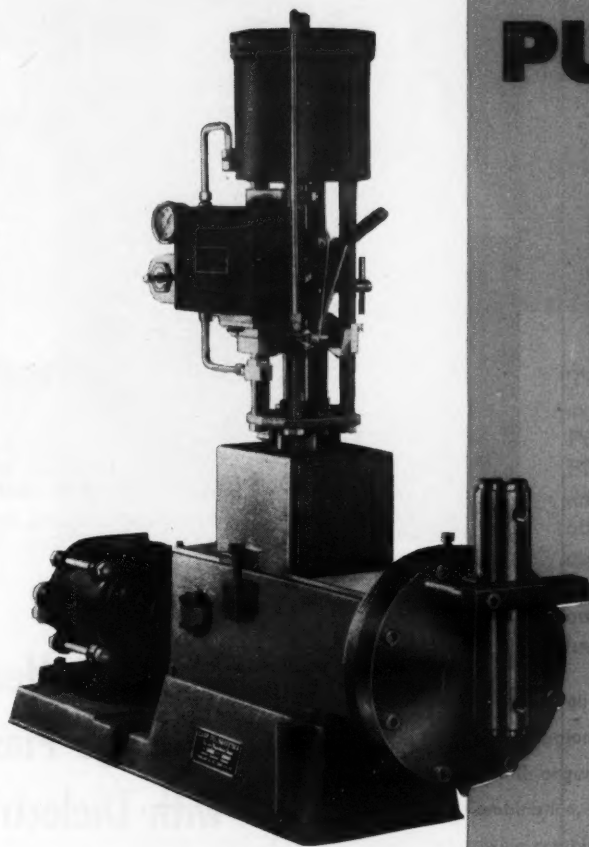
Construction has started on a plant at Newark, N. J. to produce a new platinum-containing catalyst for use in reforming petroleum. It will represent an investment of \$2.5 million when completed in 1954.

According to a member of the Engelhard Industries group, the catalyst to be produced is the result of a joint research by Sinclair Research Laboratories, Inc. and the research laboratories of Baker & Co. It will be known as Sinclair-Baker Catalyst RD-150.

NOW!

Lapp *Auto-Pneumatic* **PULSAFEEDER**

**OPERATES
AT FULL CAPACITY
AND FULL RATED
PRESSURE**



TWO PUMPS IN ONE!

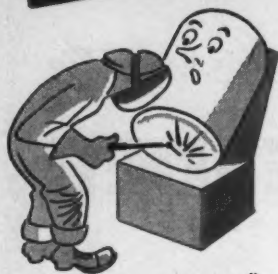
Lapp Pulsafeeder is the combination piston-diaphragm pump for controlled-volume pumping of fluids. Reciprocating piston action provides positive displacement. But the piston pumps only an hydraulic medium, working against a diaphragm. A floating, balanced partition, the diaphragm isolates chemical being pumped from working pump parts—eliminates need for stuffing box or running seal. Constant pumping speed; variable flow results from variation in piston-stroke length—controlled by hand-wheel, or, in Auto-Pneumatic models, by instrument air pressure responding to any instrument-measurable processing variable.

The Lapp Auto-Pneumatic Pulsafeeder has made possible automatic continuous processing in many processes involving chemicals or mixtures which have not been satisfactorily handled by pumps of conventional construction. In this construction, pumping rate is controlled by instrument air pressure responsive to variable flow, pH, temperature, liquid level, pressure, or any other instrument-measurable processing variable. And now, new improved Auto-Pneumatic instrumentation provides for greater capacity and/or pressure—full ratings as listed for manually-controlled models.

WRITE FOR BULLETIN 300 with typical applications, flow charts, description and specifications of models of various capacities and constructions. Inquiry Data Sheet included from which we can make specific engineering recommendation for your processing requirement. Write Lapp Insulator Co., Inc., Process Equipment Div., 102 Wilson St., Le Roy, N. Y.

When inquiring check CP 4194 on handy form, pgs. 2-3

FABRICATING YOUR STAINLESS STEEL EQUIPMENT *Is no cinch!*



"Not too hot, please"

Not too much heat—not too little in the welding arc! Stainless steel is tricky to fabricate. Our experienced welders know that improper welding temperature reduces corrosion resistance at the seams. Blickman-controlled welding procedures give you sound, corrosion resistant welds.



"Shine 'em up"

Get just the right finish for your application. Working exclusively with stainless steel, we have ALL the tools to produce right in our own plant a finish which assures quicker, more thorough cleaning of your vessel.



"Inspect my seams again, pal"

Double check the inspection procedures of your fabricator. Knowing that the properties of the alloy can be impaired during fabrication, we have established rigid shop procedures and inspection methods as an extra guarantee of soundly built vessels.

When you need stainless steel equipment, call in a fabricator who knows how to handle this alloy in his shop.

S. BLICKMAN, INC. • 710 GREGORY AVE., WEEHAUKEN, N. J.

S. BLICKMAN, INC.
Guards Alloys in Fabrication

SEND FOR THIS
VALUABLE BOOK
A request on your letter-
head will bring every-
thing. "What to Look
for When You Specify
Stainless Steel for Your
Processing Equipment"



CORROSION RESISTANT PROCESSING EQUIPMENT



You are welcome to our exhibit at the Chemical Exposition, Commercial Museum and Convention Hall, Philadelphia, Pa., Booth 407, November 30-December 5.

When inquiring check CP 4195 on handy form, pgs. 2-3

processing equipment



Fig 1 Dielectric heating units, at extreme right and left, in operation at Chicago Molded Products Corp. in preforms for molding of 21" television cabinets

Maintain Heavy Production Schedules of Large Plastic Moldings with Dielectric Heating Units

PROBLEM: Chicago Molded Products Corp., pioneer molders of large thermosetting parts, in order to meet the demand for 21" television cabinets, had to provide means for maintaining uninterrupted, continuous production. Dielectric plastics preheating equipment was needed that would withstand the grueling, 24 hours a day, six days a week schedule, without delaying the huge 1500-ton presses.

Electronic units of high individual capacity were required, having the ability to handle several different types of preforms, and which would not interfere with radio and television reception in

Flexible, high frequency equipment is used continuously at maximum capacity without delays for tube replacements or blown fuses, permitting uninterrupted operation of 1500-ton presses

the surrounding area. Above all, dependability was paramount. Frequent tube replacements, blown fuses and other breakdowns would result in costly failures to maintain schedules.

Solution: Also one of the first plastic molders to use dielectric heating, Chicago Molded had tried out a number of different types, and adopted the most satisfactory for this large thermosetting



Fig 2 Preforms to be used in transfer molding of iron handles are being preheated in high frequency unit appearing at left

division. Records maintained over a period of years show that Thermex units were particularly notable for their reliability, freedom from tube replacements and lack of radio interference. For these reasons, 15-kilowatt dielectric heating units of this type were acquired and placed in operation in the Large Parts Molding Division.

Frequently two such units are used to service the larger presses where two or more 21" cabinet molds are operating simultaneously. One example of the use of this equipment in heating plastic preforms for molding these large one-piece television cabinets is shown in the accompanying Fig 1.

First step in operation, preceding that shown in photograph, is to tumble the thermosetting phenolic molding powder to insure even distribution of the coarse particles with the fine. Next the powder is poured into hoppers which feed into preforming machines. Preforms look like ordinary bricks — in size, shape and color. These preform bricks are stacked in rows and transported directly to the dielectric heating units.

As shown at right and left in Fig 1, 29 lb of the preform bricks are weighed out on platform scales. Behind the bricks on the scales are the dielectric heating units. Preforms are heated in the drawer type heaters for a period which may be a variable factor under some circumstances. However, the heating time can be safely said to be well under two minutes. Drawer of unit at right is shown partly open.

The dielectric units heat by means of a high frequency electric field developed between two electrodes where the preform bricks are placed. Dielectric heating was originally developed several years ago to replace oven heating and decrease cycles. Oven heating takes several times as long. In addition, it heats from outside in, causing non-uniform temperatures to preform. That older

(Continued on next page)

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FOR ANY PRESSURE
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ANY REACTION**

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BLAW-KNOX

BLAW-KNOX COMPANY
BLAW-KNOX EQUIPMENT DIVISION
Process Equipment Department



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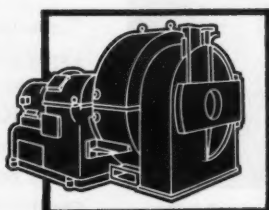
When inquiring check CP 4196 on handy form, pgs. 2-3

SEE THE BAKER PERKINS EXHIBIT

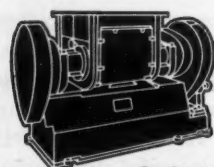
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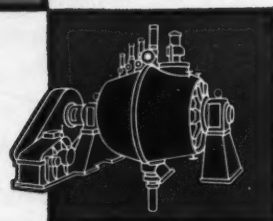
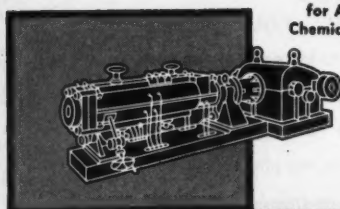
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and Batch Mixers
for All Types of
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CHEMICAL MACHINERY DIVISION, SAGINAW, MICHIGAN

When inquiring check CP 4197 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

(Continued from preceding page)

method of heating also did not allow heating close to molding temperature in order to decrease cycles. For example, if upper limit was 250°F, center of brick would not be over 200°F.

Dielectric unit heats entire brick from 80 to 250°F in less than two minutes. Equipment shown in Fig 1 consists of two 15 kw units. Each has power input of 28 kva @ 95% power factor, electrode size of 20 x 20" and dimensions of 88 x 37 x 37". Each has an oscillator tube, six rectifier tubes and a control tube.

Units shown in picture each have three sections. Lower portion contains plate and filament transformers for the rectifier. Center section, which hold the preforms, contains the high frequency electrodes. Large 10,000 volt oscillator tube is in the upper part.

After the preforms are preheated, they are molded on the dual press shown in the center of the picture. Forgings from which the mold cavities (above TV cabinets) were machined are the largest tool steel forgings produced to date in this country, as far as can be ascertained. Each of these molds weighs 18,000 lb. This operation illustrates the present trend in the plastics industry toward molding more large one-piece parts. Another example of the use of this type of dielectric heating units in the plastics plant is shown in Fig 2. In this operation, coffee-maker handles are being formed by transfer molding. The smaller capacity electronic heating unit appears at left of photograph, with drawer partly open. As may be seen, in this case the preforms are cylindrical shaped.

Results: Heavy production schedules are being maintained in the Large Parts Molding Division with the help of the type of dielectric heating equipment being used for the operation. In spite of the continuous, maximum capacity load being handled by the heating units, uninterrupted production has been maintained. Rectifier tubes have had long service life and few fuses have been blown. General maintenance has been successfully reduced to a minimum.

Equipment has been found to satisfactorily meet the critical heating requirements of the operation. Formation of blisters due to insufficient heating or hardening of preforms due to excessive heat has been avoided. Uniform heating results in production of high quality television cabinets and other products, with very few rejects.

Dielectric heaters have been found to be highly flexible, being able to handle several different styles of preforms if required. In spite of the 10,000 volts of electricity used in equipment, it has been found to be absolutely safe. Operation of the units has not interfered in any way with satisfactory radio or television reception in the surrounding areas.

(Thermex dielectric heating units are manufactured by The Girdler Corp., Thermex Div., Dept. CP, 224 E. Broadway, Louisville 1, Ky. . . or for more information check CP 4198 on handy form, pages 2 and 3.)

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NO LEAKAGE at STUFFING BOX

Fig.
19,488

VERTICAL DESIGN
Taber vertical pumps are specially built for handling chemical solutions, efficiently and economically . . . in the processing industries. Vertical design permits locating stuffing box above and out of liquid level. Therefore nothing to leak.

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TABER PUMP CO. Est. 1839
320 ELM ST., BUFFALO 3, N.Y.



When inquiring check CP 4199 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Provides complete absorption of HCl and similar gases in one gravity-flow pass . . .

impervious graphite falling-film unit supplies acid at temperature close to that of cooling water

Uses: Falling-film absorber is designed for absorption of hydrogen chloride and similar gases (where acid conditions exist).

Features: Manufacturer reports complete absorption when handling 40-100% gases up to rated capacity, without vent losses. One-pass gravity flow is employed in normal operation, which does away with pump maintenance and intermediate acid storage. Pressure drop in normal operating range is only 5" of water.

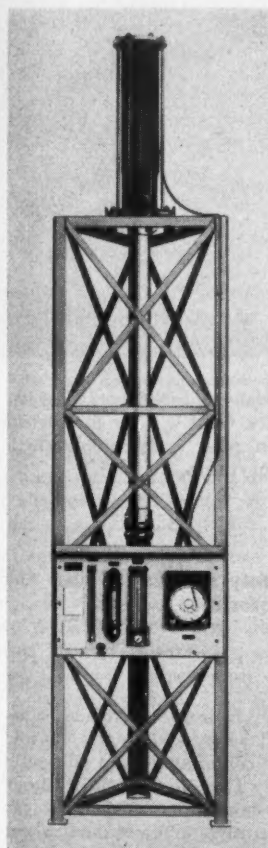
Feed gas temperature has practically no effect on operation because of the co-current flow in the cooler-absorber. Product acid is discharged from system at temperature close to that of cooling water, thus eliminating after-cooling. Feed water rate is automatically controlled.

Description: The Model 8A Karbate impervious graphite falling-film absorber replaces the Model 6B Karbate hydrochloric acid absorber, and is lower in cost despite its increased capacity. Basic equipment requires only about 5 sq ft of floor space, but will produce its own

weight in 21° be' HCl in less than an hour. Water-white or USP acid can be produced without special accessories.

The Karbate tubes and wall are chemically inert to all strengths of HCl, at all temperatures encountered in commercial work (gas temperatures ranging from minus 40 to plus 700°F).

(Developed by National Carbon Company, a Division of Union Carbide and Carbon Corporation, Dept. CP, 30 E. 42nd St., New York 17, N. Y. . . or for more information reader may simply check CP 4200 on handy Reader Service slip between pages 2 and 3.)



Impervious graphite falling-film absorber

NOT EVEN DRY CEMENT CAN PLUG THIS FLEX VALVE!

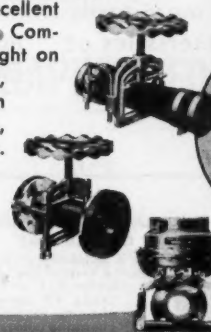
At Porete Manufacturing Co., North Arlington, N. J., where precast concrete roofing slabs are made, production depends on a constant supply of dry cement, unloaded through a pipe line under pressure. Using a rotary plug valve, it took 3 men an 8-hour day to handle 70 tons. Frequently the valve jammed after only half an hour of operation, making it necessary to force the action with a bar. Often, in cold weather, the valve had to be heated. Then Porete discovered Flex Valve. For more than two years the Flex Valve shown here has given trouble-free service. One man now controls the diaphragm-operated mechanism with a simple lever. If you have a problem in controlling the flow of any hard-to-handle fluid, send for Catalog No. FL 382. B

Exclusive FLEX VALVE Features (Pat'd & Pat. Pending)

- Will outwear any metal valve on abrasive service. Proven minimum 11 to 1 life over metal
- Full pipe capacity
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- Valve body available in pure gum rubber, neoprene, butyl, buna-n, buna-s, food stock and special compounds.

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When inquiring check CP 4201 on handy form, pgs. 2-3

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with a **GAULIN** Homogenizer

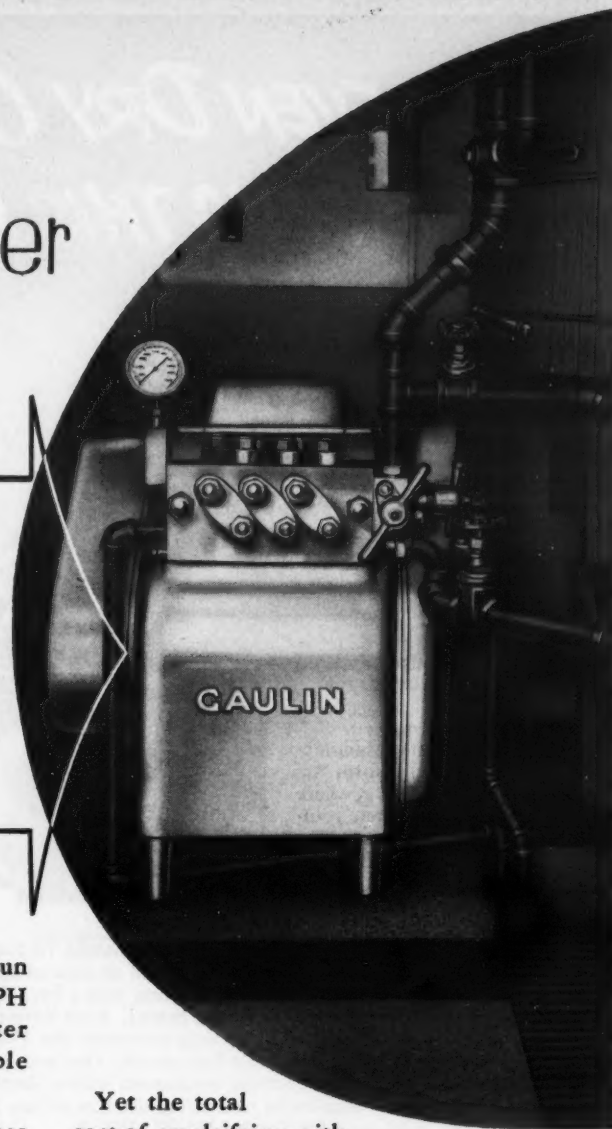
This world-famous division of the Sun Chemical Company depends on a 500 GPH Gaulin Homogenizer to turn its water repellent mixtures into uniform, stable emulsions.

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GAULIN PILOT PLANT HOMOGENIZER

Ideal for experimental purposes, operation or process requiring up to 25 gallons per hour capacity. Handles quantities as small as one pint. Available on low rental basis.



GAULIN TWO-STAGE COLLOID MILL

Stator is jacketed for cooling or heating. Gap setting adjustable for .001" to .045". Only 45 seconds clean-up required in changing colors. 12" x 17" floor area.

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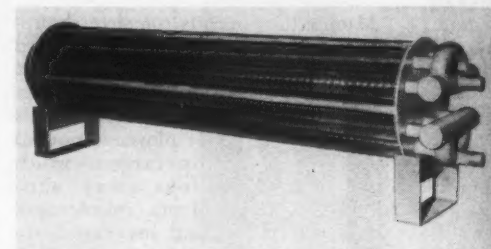
When inquiring check CP 4202 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Serrated fins wound helically on tubes of tank heater

Uses: Tank heaters of two types: one for complete submergence in fluid, and the other for installation in a manhole.

Features: Wide tube spacing and helically wound fin surface are said to cut required tubing length to



Tank heater

one-eighth of that usually required in plain tube heater or internal pipe coils.

Description: The horizontal Cal-Fin tank heaters have serrated fins which are welded, by a continuous bead, to the tubes. Fins and tubes may be stainless or carbon steel.

(Announced by Drayer-Hanson, Inc., Dept. CP, 3301 Medford St., Los Angeles, Calif. . . . or in order to obtain more information reader may simply check CP 4203 on handy form, pages 2 and 3.)

Strong corrosives safely filtered by porous plastic material . . .

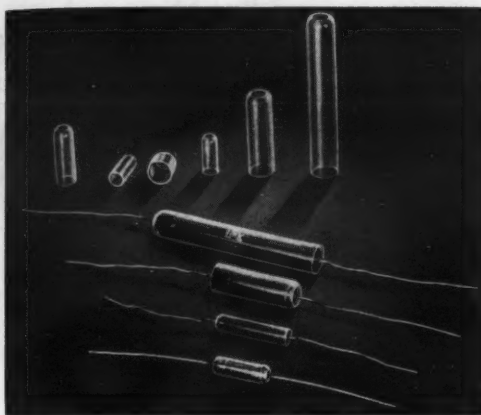
has had success as a gas sparging element and is desirable as a venting medium

Uses: Fuming nitric, hydrogen peroxide, aqua regia and practically all acids, alkalis and organic chemicals can be filtered continuously and efficiently through this material. Due to its fine porous structure it has been successfully used as a gas sparging element in corrosive solutions and where severe thermal cycling occurs. Chemical and mechanical characteristics of the plastic make it desirable as a venting medium for corrosive containers.

Features: Kel-F, polytrifluorochloroethylene plastic, has a fine porous structure. It is chemically inert, non-wetting, flexible and tough. And in filtering operations, the pore size remains constant because of plastic's dimensional stability.

Description: Filtering and venting elements are available in disc and corrugated high-area units for pipeline use and in square stock sheets. Circular elements from 1/2 to 12" diameter, and sheets up to 24 x 24" are produced in 1/16 and 1/8" thicknesses with integral rims of solid Kel-F for added strength. Fine pore size of these chemically-inert filters removes particles larger than five microns. Water passes through at rates up to 100 gpm per sq ft of filter area at a 10 lb pressure differential.

A tensile strength of 900 psi and an elasticity modulus of 18,000 psi allows virtually unrestricted use of the plastic in flanged or pressure assemblies for pipeline filtration at temperatures up to 390°F. Excellent flexibility and toughness eliminate breakage due to careless handling. Dimensional stability at low (minus 320°F) and high (390°F) temperatures and in contact with water are additional advantages of the plastic.



Filter pore size remains constant due to dimensional stability of plastic over wide temperature range

In gas sparging or "scrubbing" of corrosive liquids, toughness of fluorocarbon diffusion element prevents corrosion and erosion as well as damage due to gas or liquid shock.

This combination of properties is said to make the porous material an ideal venting "valve" for shipping containers for "violent" corrosives such as concentrated hydrogen peroxide.

(Filtering and venting elements, made of Kel-F (a product of The M.W. Kellogg Co.), are produced by Porous Plastic Filter Co., Dept. CP, 30 Sea Cliff Ave., Glen Cove, N.Y. . . . or for more information reader may simply check CP 4204 on handy form, pages 2 and 3.)

32 pages filled with filters, tanks, mixers and pumps

Manufacturer's line of "sealed-disc" and cartridge filters, mixing and storage tanks, portable mixers, fixed agitators, and transfer pumps — much of it in stainless steel — is illustrated and discussed in 32-page catalog. Each product is treated separately, its features are described clearly and fully, and design variations, detail drawings, parts lists, and application and performance data are included. A few examples of custom-designed processing units are shown.

Bul G-553 is issued by Alsop Engineering Corporation, Dept. CP, 800 Alsop Sq., Milldale, Conn. When inquiring specify CP 4205 on handy form, pages 2 and 3.

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2 New "KARBATE" Centrifugal Pumps

BRAND



**CATALOG SECTION S-7250
CONTAINS:**

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- Assembly information
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- Dimensions
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- OUTSTANDING CORROSION RESISTANCE
- COMPLETE IMMUNITY TO THERMAL SHOCK
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When inquiring check CP 4206 on handy form, pgs. 2-3

GASKETS with GUTS

Chemiseal ^{MADE OF} **TEFLON** Gaskets

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Laugh at Acids, Caustics, Solvents

Chemiseal Gaskets have become standard for corrosion and contamination problems because—made of TEFLON—they are inert to all chemicals excepting molten sodium and fluorine.

Chemiseal Teflon-Jacketed Gaskets are available in any size, with a variety of filler materials suitable for glass, glass-lined, porcelain, Karbate, Havg, stainless or other metal piping and equipment.

These fillers are protected on both faces and the inside diameter by the chemical resistant Teflon Jacket.

Ask for Catalog No. 1-339 WA.

Chemiseal Snap-On Gaskets, molded from Solid Teflon are available with projections matching grooves in pipe ends of all conical-end glass pipe joints. Ask for Catalog No. 820.

Cut Teflon Gaskets are also available, either as ring or full face gaskets for all standard pipe sizes or for irregular shaped openings. Ask for Catalog No. 310.

UNITED STATES GASKET COMPANY

FLUOROCARBON PRODUCTS DIVISION
CAMDEN 1, NEW JERSEY

Representatives in Principal Cities Throughout the World

When inquiring check CP 4207 on handy form, pgs. 2-3

PROCESSING EQUIPMENT

Sulfur solidifies continuously at low cost and no hazard on cool stainless belt . . .

two-year-old installation shows operation cost of 1/3 to 1/2 that of "vat" storage-blasting method

Uses: Continuous solidification of molten sulfur in the form of glass-like chips about 5/16" thick by 3/4" on a side.

Features: Estimates show that cost of solidifying by this method is 1/3 to 1/2 that of the "vat" storage-blasting technique . . . and it's much safer, too. Has been proved by two years of continuous operation in the world's second largest sulfur recovery plant.

Description: Continuous stream of molten sulfur is poured onto a horizontal steel conveyor belt 32" wide by 184' long between pulley centers. The belt, designed by Sandvik Steel Corporation of New York City, is made of a special stainless steel imported from Sweden. Narrow rubber edging holds a pool of liquid sulfur on upper strand of belt which, in turn, drags along the top of shallow tanks from which cooling water overflows. Thus, the belt is in effect floating on the overflowing water which cools it and solidifies the sulfur.

A ribbon of solid sulfur separates from the belt at the discharge end, and is broken into the chips.

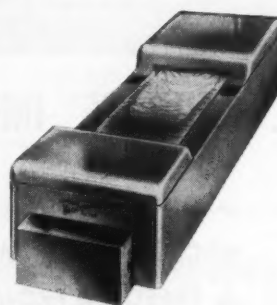
(Announced by S. Schwartz & Associates, Dept. CP, 165 Broadway, New York 6, N. Y. . . or check CP 4208 on handy form, pages 2 and 3.)

Dirty coolant gets cleaned by vacuum filtration thru moving belt . . .

compact continuous filter has special fabric belt that may be removed quickly and easily

Uses: Although designed primarily for continuous vacuum filtration of coolants, filter has characteristics which may be useful in certain types of chemical or allied process work.

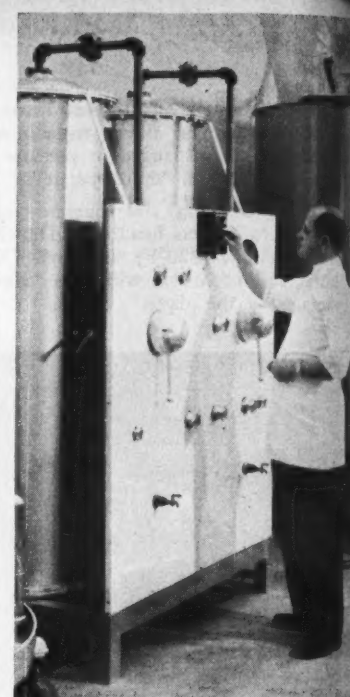
Features: Compact and space-saving in design. Specially woven endless belt—of nylon, wool and cotton fibers—has a nap surface to prevent particles from becoming embedded in weave. This belt may be removed in a matter of minutes, and its adjustment collars are conveniently located at top side of unit. Crowned roll keeps belt centered as it moves.



Vacuum type, continuous coolant filtration unit

Description: Accompanying schematic drawing shows how the Vacu-matic

Filter works. 1) Dirty coolant (or slurry to be filtered) flows by gravity from distributor head,



"PACKAGE" DE-IONIZER produces solids-free water used in the preparation of pharmaceuticals. (Illico-Way Model LU-390, 1000 gph.)

De-ionized Water in a "package"

A complete line of standard (package-type) De-ionizers—for production of solids-free De-ionized water (flow rates from 100 to 1000 gph.). Three types: Mixed-Bed and standard two-bed, with or without silica removal. Ideal production units; convenient for laboratory and pilot-plant research.

Units are compact, shipped completely assembled and base-mounted for ease of installation and operation, requiring only connection to raw water, drain, and treated water outlets.

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of Bulletin PK-152, containing general unit specifications, complete description of equipment and performance data. Please write on company letterhead. Address: Illinois Water Treatment Co., 903-10 Cedar St., Rockford, Illinois.



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ionXchange

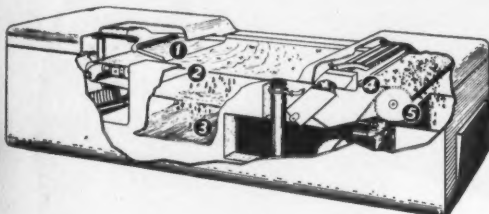
When inquiring check CP 4209 on handy form, pgs. 2-3

CHEMICAL PROCESSING

PROCESSING EQUIPMENT

which spreads it evenly across the endless belt. 2) Belt moves continuously forward over the vacuum chamber, evacuated by built-in vacuum pump, while liquid is drawn through. 3) Filtered coolant drains into clean coolant sump from which it is removed by built-in pump.

4) Belt carries caked particles forward toward discharge, and a vibrator loosens them just before the



Reveals how filter operates

radius of the discharge-end roller. 5) Dewatered cake drops off the belt and directly into removable tote box.

Two models are available, the VAC-12 and VAC-24. Following are the specifications for both:

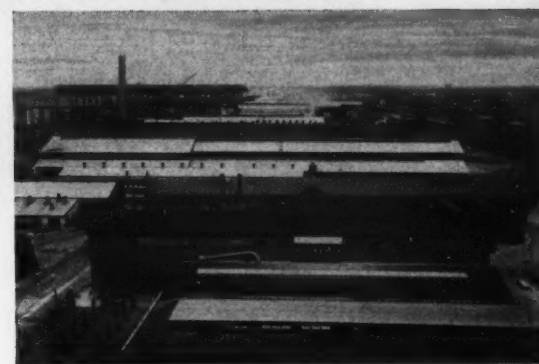
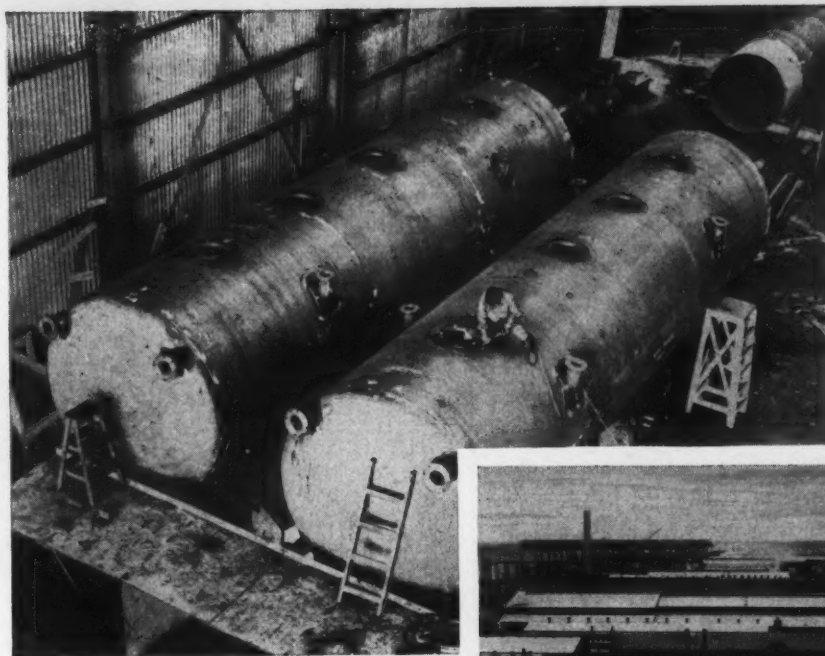
	VAC-12	VAC-24
Maximum flow rate, gpm (based on soluble oil coolants)	20	40
Capacity, gal	35	75
Vacuum pump cfm	150	300
Vacuum pump hp	1/2	1
Coolant pump hp	1/3	1/2
Belt drive motor hp	1/3	1/2
Overall length, inches	77	85
Overall width, inches	32 1/2	58 1/2
Overall height, inches	20 1/2	22 3/4

(Developed by Industrial Filtration Division, U. S. Hoffman Machinery Corporation, Dept. CP, 219 Lamson St., Syracuse 6, N. Y. . . . or for more information check CP 4210 on handy form, pages 2 and 3.)

58 pages show rotary dryers, coolers, calciners, kilns

Rotary dryers, coolers, calciners, kilns, and associated equipment are given full coverage in 58-page, two-color, heavily illustrated bulletin. Three pages are devoted to descriptions and pictures of laboratory size rotary dryers and calciners for experimental work. Three other pages contain photographs of different types of units, with brief captions explaining kind of service to which they are being put.

Handy tables near the back of book provide data to aid in selecting equipment. Also provided are questionnaires to be filled out for manufacturer so he can calculate dryer, calciner or cooler needs. Bul 89-RC is issued by The C. O. Bartlett & Snow Company, Dept. CP, 6200 Harvard Ave., Cleveland 5, Ohio. When inquiring specify CP 4211, pgs. 2 & 3.



A Mile of Shops — Each shop is devoted to a special type of heavy production. Included are complete Machine Shops, casting, forging and other facilities which offer all of the advantages of the execution of the complete job.

A half mile of pressure vessels

These are two of seventy — over 1/2 mile — of 38 1/2-foot vacuum tank casings built to meet the quality requirements of a well-known chemical maker.

The buyer also benefits from many savings made possible by Newport News extensive heavy fabrication equipment and the sixty years experience in using it.

Do you plan installations of heavy production equipment? You can command the services of Newport News for weldments of

corrosion-resistant, alloy and clad metals in almost any size or shape, plus the required engineering background and complete welding and stress-relieving skills.

It will pay you to get the facts, shown in *Facilities and Products*. As you glance at its photos and brief captions, you'll see why Newport News can turn out — at low cost — specialized heavy equipment for chemical plants.

Send for *Facilities and Products* — free — today.

Newport News Shipbuilding and Dry Dock Company Newport News, Virginia

When inquiring check CP 4212 on handy form, pgs. 2-3



Typical Van-Cor
pipes and fittings
fabricated to speci-
fications by Van Dorn



Van-Cor

INDUSTRIAL PLASTICS—

✓ Both Chemically Resistant and
Impact Resistant Types

✓ Tensile Strength of Aluminum,
with one-half its weight

✓ Readily Formed, Machined,
Drawn Molded or Welded

AVAILABLE FORMS

SHEETS . . . $\frac{1}{8}$ " through 1"

PIPE . . . $\frac{1}{2}$ " through 6" diameter (10 ft. lengths)

ROUND BARS $\frac{1}{4}$ " through 2" diameter (10 ft. lengths)

WELDING ROD $\frac{1}{8}$ " and $\frac{3}{16}$ " diameter

TYPICAL APPLICATIONS

Van Dorn fabricates its Van-Cor rigid non-plasticized polyvinyl chloride into such products as: Ducts, Hoods, Chemical Tanks, Tank Liners, Plating Racks, Fume Stacks and Piping.

WRITE FOR ILLUSTRATED BULLETIN AND SPECIFICATIONS

INDUSTRIAL DIVISION OF
COLONIAL PLASTICS MFG. CO.

SUBSIDIARY OF

THE VAN DORN IRON WORKS CO.

2685 East 79th Street

Cleveland 4, Ohio

Combating

Filiform Corrosion

Technical paper suggests control by
keeping humidity low, using perme-
able finishes, avoiding contamina-
tion, rinsing with demineralized
water, and by choice of metal

IN a recent technical paper, the phenomena of filiform corrosion is explained in detail, with suggestions resulting from investigational work presented for its control. The word "filiform," was used by C. F. Sharman in 1944 to describe the threadlike type of rusting which occurs mostly on ferrous surfaces, but has also been observed on magnesium and aluminum. Although no cure-all has been discovered, this type of corrosion can be controlled by holding the humidity low, using finishes of high permeability, eliminating contamination or marring, rinsing with demineralized water, and by selection of metals.

Filiform corrosion has been found to occur more frequently than had been recognized previously and has become a matter of serious concern, especially to industrial finishers. An example of filiform is

corrosion
control



Fig 1—Filiform on stripped
hygrometer housing



Fig 2—Filiform under clear
varnish on cold rolled steel

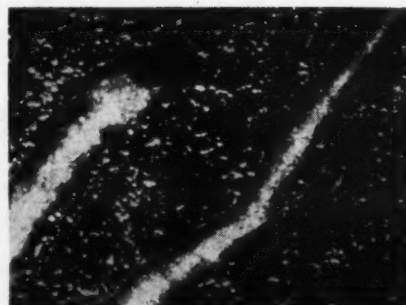


Fig 3—Magnified view of fili-
form threads

shown in accompanying Fig 1, a photograph of a portion of the metal housing of a laboratory hygrometer with its enamel finish removed after several years of service. Fig 2 shows a section of a test panel on which consider-

able filiform had developed under a clear varnish after 840 hours exposure in an atmosphere maintained at 86% RH at 75°F over sulfuric acid solution.

The magnified photograph shown in Fig 3 exhibits a portion of an inactive filiform body at the lower right and part of a growing thread with the characteristic V-shaped head. The possible initiating mechanism for this type of corrosion, as described in the

paper, will not be given in detail since it is rather complex. However, it can be said that it is an electrolytic process which may be started at any imperfection in the surface and is accelerated by high humidity and the presence of ionizable salts.

Fig 4 illustrates a possible driving mechanism. The head at the left is kept going by the oxygen concentration cell. Although the theoretical explanation of this process is also rather involved, it can be said that with concentration difference, oxidation occurs in the active head, while depolarization results near the ferrous-ferric interface.

One frequent suggestion is that the filiform tracks may follow the metallurgical contours of the metal substrate. However, no correlation has been found with the metallurgical topography of the metal surface. To date no connection has been found between filiform growth and biological activity. The findings of a further investigation of this phase, however, should be of interest. Any association with the presence or absence of light has been disproved.

Although no ready solution to the problem of filiform corrosion has been found, methods are available to retard and control it. In this connection, the definite relation between filiform growth and humidity is of value. On test steel panels at 75°F, no filiform was observed below 65% RH, but it was quite active between 80 and 90% RH. Filiform threads became wide above 90% RH and the more familiar blisters appeared at about 95% RH.

It is certainly impractical under most circumstances to maintain the humidity below the range where rusting will appear, especially after the coated article has passed into the customer's hands. It is advisable to avoid high humidities during finishing operations, if possible, and during storage of the product.

Since the company under whose auspices the work was undertaken manufactures protective coatings, it

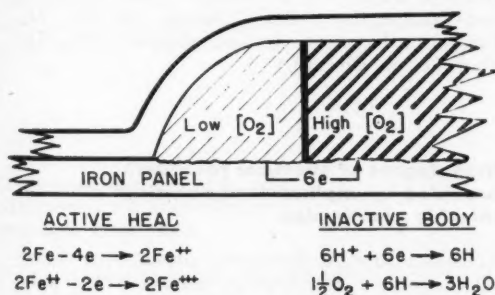


Fig 4—Diagram suggesting possible driving mechanism for filiform corrosion

is only natural that this phase received early attention. Filiform was found to occur only below the critical pigment volume concentration for each pigment-binder system. The critical pigment volume concentration (CPVC) is defined as that point at which just sufficient binder is present to fill completely the voids left between the pigment particles after volatilization of thinner. Permeable films tend to prevent filiform corrosion, but permit random corrosion.

(Continued on next page)

Take a closer look at

Light-Weight

STAINLESS
PIPING

Schedule 5 and Schedule 10

INITIAL COST

INSTALLED COST



The *initial-cost* economy of Schedule 5 and Schedule 10 stainless pipe is always attractive but only pays dividends to the careful buyer. He is willing to remember that light-weight pipe frequently requires added supports or hangers and always requires special fittings. He also remembers that alignment problems may require a longer installation time. Therefore, he balances the attractive *initial cost* against *installed cost*.

The buyer also thinks of the adaptability of new piping to existing lines and possible future requirements such as in-

creased operating pressures.

B&W manufactures all the standard pipe size schedules in a complete range of stainless steel grades. Thus, a buyer can obtain stainless pipe to meet any and every individual requirement.

It will pay you to analyze your operating requirements carefully and choose your stainless pipe on the basis of *installed cost* rather than *initial cost*. For any advice on stainless pipe or tubing, Mr. Tubes—your impartial B&W Tube Representative—is always on call.



THE BABCOCK & WILCOX COMPANY
TUBULAR PRODUCTS DIVISION

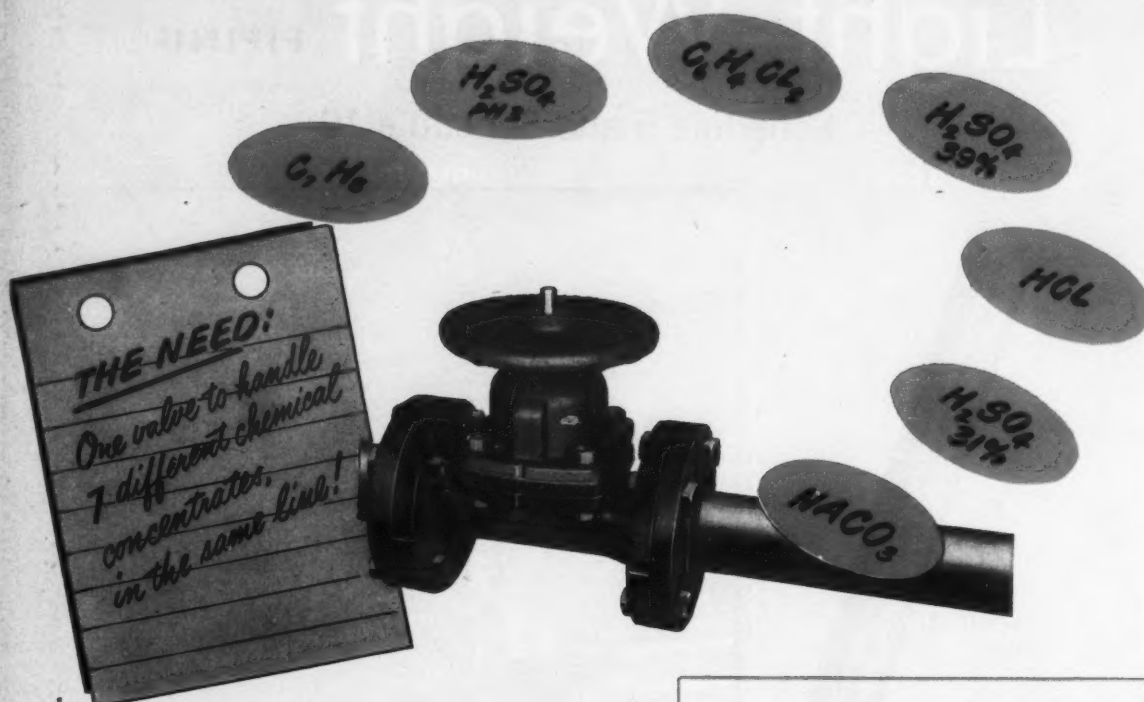
Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

TA-1761 (G)



When inquiring check CP 4214 on handy form, pgs. 2-3

What valve would you specify?



A manufacturer was looking for one valve which would handle seven chemicals of varying temperatures and concentrations, one after another, in the same line. They were . . .

SODIUM CARBONATE	PH 9	90°C
HYDROCHLORIC ACID	8%	100°C
SULPHURIC ACID	PH 3	20°C
SULPHURIC ACID	39%	42°C
SULPHURIC ACID	31%	15-20°C
TOLUENE	(Full strength but associated with traces of other chemicals)	
ORTHODICHLOROBENZENE — Cleaning Solvent		

Valves suitable for use with these chemicals individually were available. But only one valve was found which could handle them in combination. It was the Grinnell-Saunders Diaphragm Valve, glass lined, with chemically inert KEL-F Diaphragm. The Grinnell KEL-F diaphragm not only prevented the liquid from attacking working parts, but it eliminated leakage around the stem.

Piping in today's complex industrial plants is an exacting science involving the handling of highly corrosive fluids, gases, compressed air, beverages, foods and suspended solids . . . in lines where corrosion, abrasion, contamination, clogging, leakage and maintenance are costly factors. Under such conditions, the amazing adaptability of the Grinnell-Saunders Diaphragm Valve explains its acceptance by industry after industry. For further details, write for Grinnell-Saunders Diaphragm Valve Catalog.

GRINNELL

WHENEVER PIPING IS INVOLVED

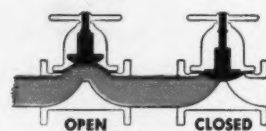


Grinnell Company, Inc., Providence, Rhode Island

Coast-to-Coast Network of Branch Warehouses and Distributors

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
industrial supplies • Grinnell automatic sprinkler fire protection systems • Amco air conditioning systems

When inquiring check CP 4215 on handy form, pgs. 2-3



Features which have made Grinnell-Saunders Diaphragm Valves the specified valve in many different industries:

Streamlined flow. Smooth, streamlined passage, without pockets. Frictional resistance at a minimum.

Leak-tight closure against grit, scale, suspended solids.

Working parts absolutely isolated from fluid. Diaphragm completely seals off working parts from fluid in the line.

Body, lining and diaphragm materials to meet service condition. Bodies stocked in cast iron, malleable iron, stainless steel, bronze and aluminum; other materials on special orders. Valve bodies lined with lead, glass, natural rubber or neoprene. Diaphragm materials of natural rubber or synthetics.

Minimum maintenance. No refacing or reseating is required. No packing glands to demand attention. New diaphragm can be inserted without removing valve body from the line.

CORROSION CONTROL

(Continued from preceding page)

Many finishes are required to have gloss, elasticity, durability, and other properties which dictate formulation with some free binder, i.e. formulation below the critical pigment volume concentration. For this reason use of flat finishes of relatively high permeability is often unacceptable. In some instances it is possible to formulate semi-gloss or gloss finishes which are otherwise acceptable and which at the same time will be sufficiently inelastic so that they will rupture when filiform develops under the film. This stops growth momentarily, after which the corrosion resumes until the next rupture, with the net result that the amount of filiform may not be objectionable. Filiform growth is not prevented by the so-called "wash primers", but it is retarded.

Care should be taken to avoid contamination of the paint coating by dust or lint during the finishing operation since such discontinuities may become initiating points for filiform and may serve to wick in moisture. Imperfections in the film and marring should be avoided as much as possible.

Reduction of susceptibility to filiform has been reported by Faneuf when phosphatized metal is given a final rinse in demineralized water. This improvement is ascribed to removal of water soluble, ionizable salts or hygroscopic materials from the metal surfaces prior to painting. Of course, filiform corrosion can be avoided through selection of the metal to be used for a piece of equipment although the amount of replacement possible is limited. Those engaged in the present program were not able to develop filiform on the more corrosion resistant forms of stainless steel, or on Monel metal, copper, brass, nickel, chrome, tin, lead, gold or titanium.

(Technical paper, "Filiform Corrosion," was presented at the 1953 Annual Conference of National Association of Corrosion Engineers in Chicago. It was written by M. Van Loo, D. D. Laiderman, and R. R. Bruhn of the Sherwin-Williams Co., Dept. CP, 115th and Cottage Grove Ave., Chicago 28, Ill. Mr. Laiderman has since become affiliated with The Toni Co. in Chicago.)

High degree of chemical resistance provided by unplasticized polyvinyl chloride plastic pipe

Resistance to most commonly encountered chemical corrosion is furnished by extruded rigid polyvinyl chloride plastic pipe and tubing, and a full range of fittings, now offered. Product is processed without the aid of plasticizers or copolymers and is said to be distinctly different from "hard vinyls" which are produced by reducing the plasticizer content. As such, the material retains the excellent unmodified characteristics of unmodified pvc.

At ordinary temperatures, the plastic is unaffected by alkalis, acids, salts, oxidizing agents, oils, greases, alcohols, gasolines, and carbon tetrachloride. However, certain types of organic solvents such as ketones, ethers, chlorinated hydrocarbons, and some aromatic hydrocarbons produce a swelling action on the material.

Ultimate tensile strength of compound is of the order of 7000 psi; compressive strength is 12,000 psi; and flexural strength is 13,000 psi. Impact strength is 0.75 lb/in of notch. Deformation under load is relatively slight, only 0.8% in 24 hours. Water absorption is low, only 0.2% in 24 hours at 25°C. Sunlight produces only a slight darkening and heat distortion occurs only above 165°F.

Pipe is stocked in 10 and 20' lengths in both standard and extra heavy weights, from 1/2 to 4" nominal pipe size. Threaded or sleeve-type fittings



Examples of wide assortment of unplasticized polyvinyl chloride plastic pipe and fittings available

are available in sizes from 1/2 to 2", larger sizes being fabricated to order. Styles include standard tees, 45 and 90° elbows, nipples, plugs, couplings, and blind or companion flanges.

(Product of Alpha Plastics, Inc., Dept. CP, 14 Northfield Rd., West Orange, N. J. . . . or to obtain more information reader may simply check CP 4216 on handy Reader Service slip located between pages two and three.)

Contamination of nitric acid eliminated by glass-lined stainless steel tank . . .

also removes hazard due to pressure formed by acid stored in metal drums

Production of a 1000 gal glassed stainless steel storage tank for the Holloman Air Force, Alamogordo, N. M., will eliminate contamination of fuming nitric acid formerly occurring and also improve safety.

The highly volatile acid, which is used for oxidizing jet fuel, has been stored in metal drums. Decomposition may dilute the acid to 50 or 60% of its full strength, contaminating it and reducing oxidizing efficiency. Also, high pressures could build up in drums, endangering personnel.

(Courtesy of The Pfadler Co., Dept. CP, 1000 West Ave., Rochester 3, N. Y.)

Only POLYKEN PROTECTIVE COATINGS fight corrosion these 2 ways in a single wrap



12 mils of protection . . . In this magnified cross sectional drawing note how the heavy adhesive mass actually penetrates metal porosity—fills pits and voids.

Cover a pipe with Polyken Protective Tape Coating and, with just one simple operation, you have double protection, a stable adhesive and a *polyethylene* backing—each one an anti-corrosion barrier in itself.

The first barrier of this coating is an extra heavy, 4 mil adhesive, which provides a superior bond to all metal surfaces as well as to its own backing. And this specially developed synthetic adhesive does more than form a tight bond—because of its thickness it actually penetrates a pipe's surface voids, pits and pores—fills them in with a material that provides excellent protection indefinitely over a wide range of temperatures and conditions.

The second barrier is a tough, elastic 8 mil *polyethylene* film, adding all the well-known properties of *polyethylene* to the protection already provided by the adhesive mass.

These two barriers, bonded together by a new process, is the solution to your corrosion problem. Polyken Protective Coatings are available in two colors: No. 900, black and No. 910, aluminum gray. Test samples and further information are available now.

TAILORED TO YOUR JOB

Polyken®
INDUSTRIAL TAPES
Department of Bauer & Black
Division of The Kendall Company

Polyken, Dept. OGJ, 222 West Adams Street
Chicago 6, Illinois

Please send me samples and further information on
POLYKEN PROTECTIVE TAPE COATINGS.

Name _____ Title _____
Company _____
Street Address _____
City _____ Zone _____ State _____

When inquiring check CP 4217 on handy form, pgs. 2-3

CORROSION CONTROL

Filters solutions ranging in pH from 0 to 14 . . .

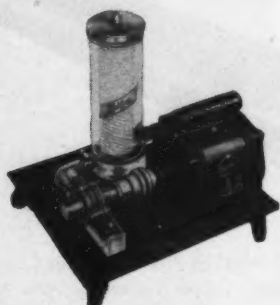
removes particles down to one micron

Uses: For filtering corrosive solutions.

Features: Units filter practically any acid or alkaline solution from pH of 0 to 14. Particles are removed down to one micron in size. Filter may be used for non-aqueous solutions where required.

Description: Additions to line of filter pumps are self-priming and have a suction lift of about

15'. Fabrication of pump is of stainless 316, with Neoprene impeller. Filter assembly is of high temperature Lucite and is also available in Haveg, stainless 316, rubber lined, or with epoxy resin construction. Filter tubes can be furnished in cotton, Dynel, porous stone, or porous carbon.



Self-priming filter pump

Cotton or Dynel yarn is wound around a stainless steel supporting core or perforated Bakelite tube to give a $\frac{3}{4}$ " thick wall of interlaced filtering cylinders. Channeling or rupturing is eliminated by the heavy wall of yarn surrounding the core. Filtration is in depth and is not a surface operation. Size of particles to be filtered out can be controlled by varying the density of the mesh of yarn wound on the core.

Model LSIN-5 has capacity of 50 gph, is 14 x 16 x 12", and weighs 50 lb. Model LSIN-10 has capacity of 100 gph, has dimensions of 14 x 16 x 16", and weighs 60 lb.

(Product Sethco Mfg. Co., Dept. CP, 70-78 Willoughby St., Brooklyn, N. Y. . . . or for more information check CP 4218 on handy form, pages 2 & 3.)

Key to reduced painting costs found to be careful surface preparation . . .

long service life results with blend of oil and phenolic vehicles

Experience of the manufacturer in Grasselli, N. J. shows that the principal factor in reduced painting costs is careful surface preparation, and then repainting before a complete breakdown of the original application occurs. A surface requiring extensive scaling and cleaning is three times as costly to prepare and prime as it is to apply the finish coat. Surface preparations by the use of phosphorizing chemical coatings are currently being investigated by the manufacturer.

This manufacturer refuses to gamble with



The PYREX cascade cooler installation at Hydrocarbon Chemicals, Inc. (at top of photo), is used in the finishing operations of many of their highly refined products.

The cooler consists of 2 banks of 11 two-inch glass tubes. The glass provides the corrosion resistance necessary to protect against product contamination and excessive replacement costs.

200 ft. of PYREX pipe transfer solutions from catalyst room to glass-lined reactors, from reactors to cooler, and from cooler to glass-lined storage tanks. No breakage problem has been encountered although solutions at 210° F. are sometimes run through the pipe at 32° F. and lower. Product purity is a primary consideration.

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mb with product purity

That's why he specified

PYREX "Double-Tough" Glass Pipe brand

Knowing the character of the chemicals its equipment must handle, Hydrocarbon Chemicals, Inc., Newark, N. J., chose the most practical piping material which would insure its products against contamination and at the same time eliminate all chances of corrosion and subsequent high replacement costs.

That material was PYREX® brand Double-Tough Glass Pipe which resists virtually all acids (except hydrofluoric) and stands up well under most caustics.

The savings in replacement costs and unspoiled product batches have paid for the installation several times over, reports Mr. Frank T. Andrews, President.

No breakage problems

Mr. Andrews also reports "no breakage problems" with PYREX pipe, even though his men sometimes run concentrated acids at 210° F. into pipe that's under 32° F. "There would have to be a lot of breakage before I would abandon the use of glass pipe," Mr. Andrews adds.

The low coefficient of expansion of PYREX brand glass No. 7740 accounts for this ruggedness. It permits heavier wall construction than would be possible with ordi-

nary glass. This greatly increases its resistance to physical impact.

Glass pipe offers these basic advantages

Mr. Andrews cites the following basic advantages his company has realized from using PYREX pipe:

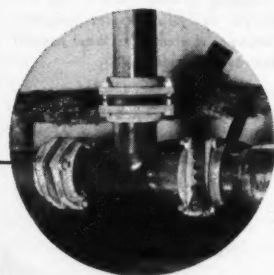
1. **It withstands the most corrosive acids.** Thus pipeline replacement and maintenance costs are minimized. Production time is saved.

2. **Its chemical stability also protects product purity.** This is particularly important since many of his products go to pharmaceutical manufacturers.

3. **It is easy to clean.** Hydrocarbon Chemicals simply run a detergent through the lines and flush with hot water.

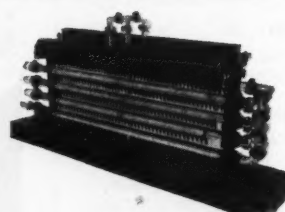
4. **You can make visual checks through its transparent walls** for cleanliness and flow conditions.

These may be basic reasons why glass pipe will pay for itself many times over in your plant. If you are faced with a persistent corrosion or product contamination problem, we invite you to investigate PYREX brand glass pipe and cascade coolers. The coupon makes it easy for you to get started.



Unretouched photo shows graphic example of corrosion resistance of glass pipe in chemical drain line. The glass will never corrode like the metal pipe (arrow).

PYREX cascade coolers are now available from Corning in convenient packages. Your own men can assemble them in a few hours. They can be mounted on floor, wall, or ceiling.



CORNING GLASS WORKS
CORNING, NEW YORK

Corning means research in Glass

When inquiring check CP 4219 on handy form, pgs. 2-3

The following conveniently located distributors stock and sell PYREX pipe and fittings. Contact the one nearest you for full information.

BELMONT, CALIFORNIA
Glass Engineering Laboratories

FRESNO 17, CALIFORNIA
Valley Foundry & Machine Works

NEW HAVEN, CONNECTICUT
Macolaster Bicknell Company

ATLANTA, GEORGIA
Southern Scientific Company

CHICAGO 44, ILLINOIS
Fred S. Hickey, Inc.

NEW ORLEANS, LOUISIANA
W. H. Curtin & Company

CAMBRIDGE 39, MASS.
Macolaster Bicknell Company

ST. LOUIS 4, MISSOURI
Stemmerich Supply Inc.

LODI, NEW JERSEY
Mooney Brothers Corporation

ALBANY 5, NEW YORK
A. J. Eckert Industrial Sales Corporation

BUFFALO 13, NEW YORK
Buffalo Apparatus Co.

ROCHESTER 3, NEW YORK
Will Corporation

HATBORO, PA.
Sentinel Glass Company

PITTSBURGH 19, PA.
Fisher Scientific Company

HOUSTON 7, TEXAS
W. H. Curtin & Company

SEATTLE 4, WASHINGTON
Scientific Supplies

TORONTO, ONTARIO, CAN.
Fisher Scientific Company, Ltd.

MONTREAL 3, QUEBEC, CAN.
Fisher Scientific Company, Ltd.

VANCOUVER, B. C., CAN.
Scientific Supplies

CORNING GLASS WORKS Dept. CP-10, Corning, N. Y.

Please send me the printed information checked below:

- ☐ "PYREX brand Glass Pipe in the Process Industries" (EA-1)
- ☐ "PYREX brand 'Double-Tough' Glass Pipe and Fittings" (EA-3)
- ☐ "PYREX Cascade Coolers" (PE-8)

Name.....

Title.....

Company.....

City..... Zone.....

State.....

CORROSION CONTROL

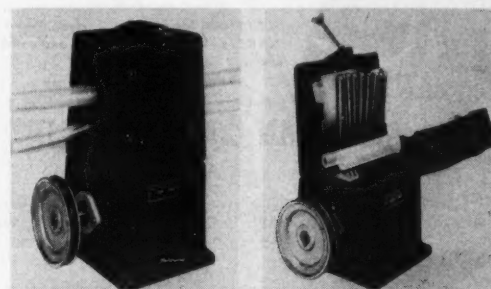
Investigations have shown that no single paint will answer every purpose. However, under the conditions at the plant, a blend of oil and phenolic vehicles has been found to give a longer service life than either type used by itself. A number of other types of paint have been tried and have proven successful in some cases. Plant is currently testing the advantages of roller application of paint on large surfaces, such as storage tanks. Indications are that a 75% manhour saving is possible with this type of application.

(Information from paper, "Corrosion Prevention and Control," by R. C. Thiede, General Aniline Works, div. of General Aniline & Film Corp., Dept. CP, Grasselli, N. J. Paper was presented at the 1953 Plant Maintenance Conference in Cleveland.)

Up to 250 gph of corrosives or abrasives in solution handled by pump...

forces liquids or gases through flexible tubing

From 45 to 250 gph of corrosive liquids or gases, or abrasives in solution can be handled by pump which operates by forcing liquids or gases through flexible tubing. Action of the pump comes from a series of chrome plated "fingers" exerting pressure on flexible tubing. In addition to handling

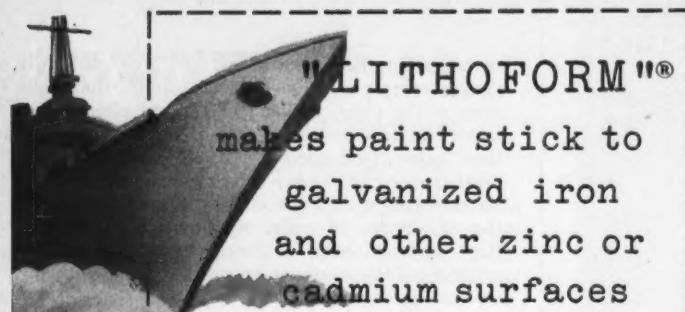


Action of pump comes from series of chrome plated steel "fingers" exerting pressure on flexible tubing

tubing up to 1" in diameter, unit has a hinged top so tubing can be placed against "fingers" for pumping without disconnecting either end. Pump operates at 500 rpm.

No connections at the pump are necessary. Liquid is pumped from one receptacle to another by merely placing the connecting tubing in the pump. Fluid in the tubing never comes in contact with the pump. No contamination or corrosion from contact with metal pump parts can occur. Different sizes of tubing, which can be supplied by manufacturer, can be used simultaneously. Several fluids can be pumped in proportion, at the same time and independently. Aluminum case stands 12" high with a 5" pulley on the side.

(Product of Sigmamotor, Inc., Dept. CP, Middleport, N. Y. . . . or for more information check CP 4220 on handy form, pages 2 and 3.)



PROBLEM:

To eliminate the peeling of paint from zinc and zinc-coated structures or products.

SOLUTION:

Treat all zinc surfaces with "LITHOFORM" before painting. "LITHOFORM" is a liquid zinc phosphate coating chemical that can be applied by brushing or spraying at the Yard, or by dipping or spraying in industrial equipment. "LITHOFORM" forms a durable bond for paint. It is economical; it eliminates frequent repainting; it protects both the paint finish and the metal underneath.

ACTION:

Send for our new descriptive folder on "LITHOFORM" and for information on your own particular metal protection problem.

"LITHOFORM" meets Government Specifications. Specify "LITHOFORM" for all painting and refinishing work on zinc and zinc-coated surfaces.

Pioneering Research and Development Since 1914

AMERICAN CHEMICAL PAINT COMPANY

Manufacturers of Metallurgical, Agricultural and Pharmaceutical Chemicals
Detroit, Mich. Niles, Calif. Windsor, Ont.

American Chemical Paint Co.
Ambler, Pennsylvania

Gentlemen:

Please send me a free copy of your descriptive folder on "LITHOFORM."

NAME.....

COMPANY
NAME.....

ADDRESS.....

CITY..... STATE.....

When inquiring check CP 4221 on handy form, pgs. 2-3

CORROSION CONTROL

Less corrosion in aluminum joining with non-hygroscopic flux . . .

lowers surface tension and improves wettability

Corrosive properties of slag formed during aluminum joining are said to be minimized or entirely eliminated with manufacturer's flux. Product is reported to lower surface tension and provide greatly improved wettability. Since flux is non-hygroscopic, it avoids corrosion caused by absorption of water from the atmosphere. Although in some instances, nature of slag may result in some degree of corrosive activity, even in these cases the degree of corrosion is but a small fraction of what has been known heretofore.

Flux cleans the joint area by removing all oxides. It also acts as an automatic heat indicator, the melting of the flux indicating the approximate joining heat. Product is said to promote smooth and fast flow of alloy, thus lowering requirements of material needed per joint. Deposits formed are small, neat and porosity-free.

(Eutector Flux 190NC is product of Eutectic Welding Alloys Corp., Dept. CP, 40-40 172nd St., Flushing, New York, N.Y. . . . or for more information CP 4222 on handy form, pages 2 and 3.)

Corrosive and abrasive liquors handled by process pumps

Construction details of process pumps for handling corrosive and abrasive liquors are described in eight-page bulletin. Units are available in five sizes to provide a wide capacity range from 20 to 1300 gpm at heads up to 260 ft. Dimensions of pumps are tabulated and a range diagram is provided.

Bul 52B6615C is available from Allis-Chalmers Mfg. Co., Dept. CP, 1151 S. 70th St., Milwaukee 1, Wis. When inquiring specify CP 4223 on handy form, pages 2 and 3.

Copper ions reduce corrosion of stainless steel by phosphoric acid

In recent studies conducted at Ohio State University, it was found that the addition of copper ions as CuHPO_4 to phosphoric acid is effective in reducing the corrosion of CF-8 stainless steel alloy. Corrosion rate is reduced from 10,000 to 10 mils per year by addition of 0.03% copper to 85% acid at 270°F. These results are only preliminary and a considerable amount of testing must be done to extend these data.

Austenitic stainless steels are, in general, quite resistant to phosphoric acid in all concentrations up to 50% acid by weight and at all temperatures up to and including the normal boiling point of the acid. Above 50% acid concentration these alloys

**Saran
rubber
CAN'T
rust...
CAN'T
corrode**

that's why
leading engineers choose
**MPC SARAN RUBBER* LINED
STEEL PIPE**
wherever corrosion is a problem!



You can be sure you're getting the highest degree of resistance to corrosive chemicals, oils, acids and solvents when

MPC SARAN RUBBER-LINED STEEL PIPE is specified. Available in either fabricated light gauge steel or standard steel pipe in 10' and 20' standard lengths, ranging in size from 8" up . . . or fabricated to your exact requirements. Fittings in standard and special designs for all diameters.

For additional information write today to your nearest MPC representative or to our application engineering department.

You can lick corrosion. It's as easy as MPC!

*a development of
The Dow Chemical
Company

EST. **mpc** 1869
MICHIGAN PIPE COMPANY
Bay City • Michigan

Manufacturers of Wood-Lined Steel, Saran Rubber-Lined Steel, Stainless Steel and Monel Pipe. Represented nationally by Sulfon Lined Pipe Co., Detroit, (Forndale) Michigan.

When inquiring check CP 4224 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Would you like to receive CHEMICAL PROCESSING personally?

It will be sent to you
without charge or
obligation . . .

. . . if you qualify
. . . if you request it

If you are responsible for processing operations in an administrative capacity as plant superintendent, chemical engineer, chemist, engineer or equivalent responsibility . . . in a plant of substantial operations* where chemical processing is an important factor . . . CHEMICAL PROCESSING will be sent to you without charge or obligation if you request it. Use form below. In requesting, be sure to answer all questions. If your firm is not rated or listed in standard references, indicate size of the company by capacity, annual sales or number of employees. Unless all information is given, magazine will not be sent.

*"Substantial operations" does not necessarily mean an extremely large plant. But requests for the magazine exceed supply so we must set standards to insure publication being sent where it can be used to best advantage.

CHEMICAL PROCESSING
111 EAST DELAWARE PLACE
CHICAGO 11, ILLINOIS

Please send me CHEMICAL PROCESSING without charge or obligation

Name _____
Title _____
Company _____
Rating of Company _____
Street _____
City _____ Zone _____
State _____
Main Products _____

OCTOBER, 1953

CORROSION CONTROL

lose their corrosion resistance. This is particularly true for samples exposed to boiling acids. Alloy CF-8M performs better than plain CF-8. CN-7MCu is still better than CF-8M alloy. Increased pressure has a pronounced effect in decreasing the corrosion resistance.

(Information obtained from technical paper, "Corrosion by Aqueous Solutions at Elevated Temperatures and Pressures," by F. N. Beck and M. G. Fontana of Ohio State University, Dept. CP, Columbus 10, Ohio. The paper was presented at the 1953 National Association of Corrosion Engineers Conference in Chicago.)

Titanium for aluminum anodizing and etching racks

Recent paper issued by R. B. Vanden Berg, Alcoa Process Development Laboratory, New Kensington, Pa., indicated that titanium could serve well as a rack material in anodizing equipment for aluminum. In addition to sulfuric acid solutions, titanium is considered satisfactory in fluoboric acid electrolyte. Metal can be used for rack material in most of common etching solutions used for aluminum except hydrofluoric and fluoboric acids. (Titanium is attacked in fluoboric acid when no anodic current is applied.) Relative resistance of titanium to etching solutions is as follows:

Etching Solution	Rating
H ₃ PO ₄ + CrO ₃ at 180°F	Excellent
H ₂ SO ₄ + CrO ₃ at 180°F	Good
50% HNO ₃ at room temp	Fair
5% HF at 80°F	Very Poor

(Courtesy of Rem-Cru Titanium, Inc., Dept. CP, Midland, Pa.)

Combination corrosion inhibitor and cleaner

Uses: Product can be used for containers handling light hydrocarbons, inedible oils, solvents and inorganics. Another application is for cleaning iron and steel cargo tanks in tankers.

Features: Material is said to combine in one operation the efficient cleaning action of caustic soda with the inhibiting action of sodium nitrite.

Description: Nitrox cleaner-rust inhibitor is a carefully blended, uniform fusion of inorganic materials produced in a cream-colored, dustless flake form. It is rapidly soluble in water, but almost completely insoluble in most inorganic materials. Product is generally used in the form of 5 to 7% water solution, applied by spray nozzles. It is not suitable for use in high temperature operations involving highly flammable substances.

(Nitrox is product of Solvay Process Div., Allied Chemical & Dye Corp., Dept. CP, 61 Broadway, New York 6, N. Y. . . . or for more information check CP 4225 on handy form, pages 2 and 3.)



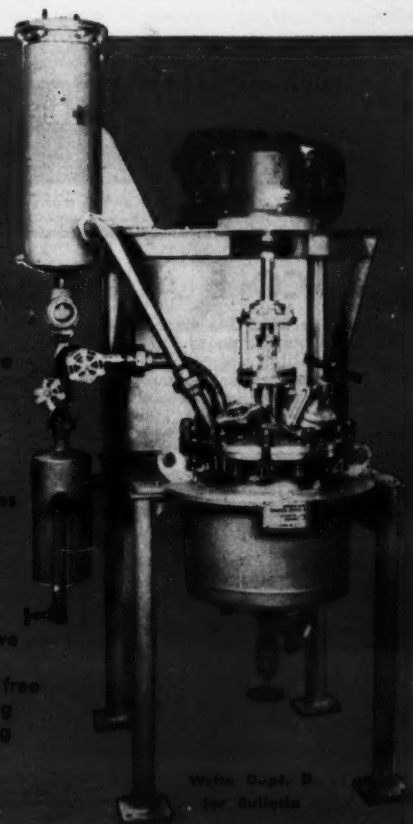
**you can
get 'em
now**

Lab Pilot Kettles for Phenolic Resins

This is new. It's the first lab pilot kettle of its kind, designed specifically for phenolic type resins. Versatility was maintained while building specific job requirements into the Model C-10 kettle. It can be used for many other applications besides phenolic type resins.

Here are the clear-cut features of this new Brighton development:

- Anchor type agitator with variable-speed drive
- Condensing arrangement for either refluxing or withdrawing
- Vacuum operation of kettle
- Steam jacketed for 90 psi
- Jacket provided with continuous spiral baffle to insure maximum cooling efficiency when water is circulated
- Condenser and receiver
- Made according to ASME code, inspected and stamped for internal pressures up to 25 psi or vacuum
- Production sizes can be built up to 3000 gallon capacity
- Overall dimensions—84" x 39" x 56"
- Flush-type bottom outlet valve
- Stainless steel construction
- Specially designed, trouble free oilless agitator shaft bearing
- Sight glasses, quick opening handhole
- Priced to fit your budget—minimum capital investment



BRIGHTON copper works inc.

820 state ave. • cincinnati 4 • ohio

DIVISIONS: F. C. DECKBACH SONS CO., HAMILTON COPPER & BRASS WORKS, BUCYRUS KETTLE WORKS
est. 1914 • engineers • metalsmiths • machinists • designers, producers of chemical processing equipment

When inquiring check CP 4226 on handy form, pgs. 2-3

**THICK, TOUGH
COATING for
STRUCTURAL STEEL—
TANK LININGS—**

Resists...

Corrosive	Concentration	Temperature
Hydrochloric Acid	Up to 37%	Up to 100°F.
	Up to 25%	Up to 140°F.
	Up to 15%	Up to 185°F.
Sulfuric Acid	Up to 78%	Up to 100°F.
	Up to 65%	Up to 122°F.
	Up to 50%	Up to 185°F.
Phosphoric Acid	Up to 85%	Up to 100°F.
	Up to 50%	Up to 185°F.



**A High Solids Neoprene Base Coating Which
Drastically Reduces Labor of Application**

On the Inside of Tanks: Apply a 1/16" corrosion-resisting lining of low cost Neoprene 100 in 4-7 brush coats instead of the 10-20 required with ordinary neoprene linings. Spraying Neoprene 100 provides dry films of 5-10 mils per coat on vertical surfaces. Coatings cure at room temperature. Material and labor cost for a 1/16" tank lining including sandblasting is approximately \$1.10 per square foot on steel or concrete. Neoprene 100 has a long pot life. Ready-to-use mixtures remain brushable 2-3 days.

On the Outsides of Tanks and on Structural Steel: Inexpensive, easy-to-use primers are available for applying Neoprene 100 to rusty or damp steel or over old paints. No expensive surface preparation is necessary.

See Bulletin 700 for details.

CARBOLINE

CARBOLINE COMPANY

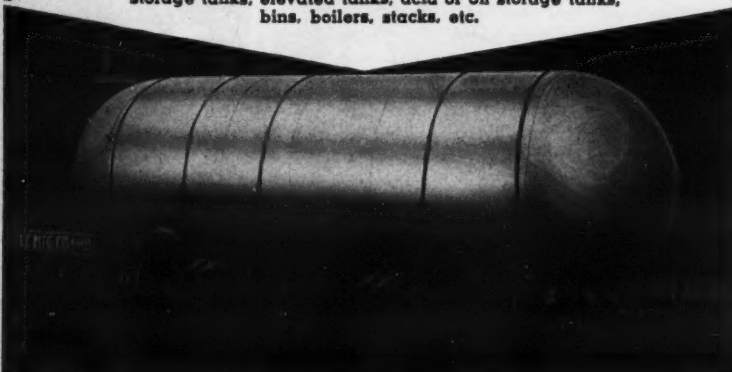
329 Thornton Avenue St. Louis 19, Mo.

Specialists in Corrosion Resisting Synthetic Materials

When inquiring check CP 4227 on handy form, pgs. 2-3

COLE ALUMINUM TANKS

We have available stock sizes from 9,500 to 22,800 gallons for pressure storage, and tanks of 99.6% pure aluminum for hydrogen peroxide from 5,000 to 11,150 gallons. "Cole" can furnish tanks made of steel, aluminum and stainless steel — built in accordance with ASME Code — to meet all insurance requirements. We invite your inquiries for high pressure storage tanks, elevated tanks, acid or oil storage tanks, bins, boilers, stacks, etc.



R. D. COLE MFG. CO.

NEWNAN, GA. Established 1854

TANKS

TOWERS

CYLINDERS

VESSELS

When inquiring check CP 4228 on handy form, pgs. 2-3

CORROSION

**Resistance to corrosion
of glass-lined steel
improved by tests...**

miniature furnace duplicates
production units

Formulations of glass are improved, periodically stepping up their acid and alkaline corrosion resistant properties when applied to steel and alloys, by the use of a miniature



Ceramic engineer places glass-lined steel test cup in miniature furnace

furnace. This electrically heated Hevi Duty furnace in the laboratory pilot plant duplicates on a smaller scale the oil and gas fired production furnaces.

In the accompanying photograph, glass is being fused to a steel test cup. Such testing is standard procedure for all new glasses, as well as for regular production work. Temperatures employed range between 1350 and 1700°F.

(Information on glass-lined steel may be obtained from The Pfaunder Co., Dept. CP, 1000 West Ave., Rochester 3, N. Y. . . or for more information check CP 4229 on handy form, pages 2 and 3.)

**Most acids and alkalis
resisted by plastic
coating...**

can be used to fill in cracks

A dark colored furane plastic resin, known as Jet-Kote, is said to possess excellent heat and chemical resistance. It will chemically set at room temperature. As a cured coating, resistance to most acids, alkalis, and solvents is possessed by the hard, glossy surface formed.

Product can either be used alone, or better yet — glass cloth welded

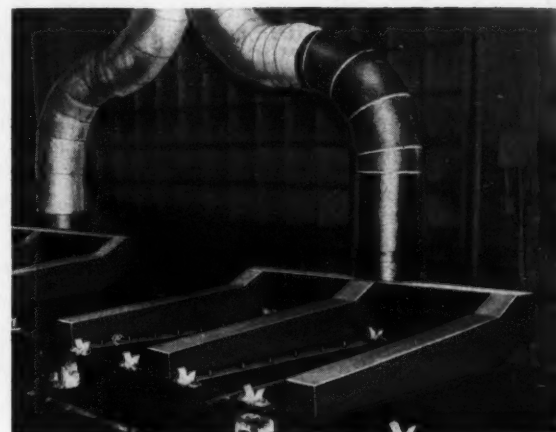
AGILENE

AGILIDE

The Most Economical Answer

**TO YOUR
CORROSION PROBLEMS
IN
CHEMICAL PROCESS EQUIPMENT**

Agile's high-grade thermoplastic construction materials —AGILENE and AGILIDE—fabricated by a combination of forming and welding processes in which we specialize, are your safeguard for an economical and properly engineered fabrication or installation.



The above installation was constructed of 1/4" **AGILENE** (Polyethylene). It was installed at Parker Rustproofing, Cleveland, Ohio, in October, 1951, and is still in excellent condition and giving maximum service. This unit was specially designed to handle sulphuric acid fumes. The round ducting and elbows are 14" in diameter and the fume hood is 54" wide x 48" deep.

SEND YOUR INQUIRIES TO

American Agile Corporation

Plant and General Offices • 5461 Dunham Rd., Maple Heights, Ohio
Mailing Address, P. O. Box 168 • Bedford, Ohio

DEPT. C-1

When inquiring check CP 4230 on handy form, pgs. 2-3

CHEMICAL PROCESSING

CORROSION CONTROL

to the surface, affording a strong, heat resistant combination which will withstand severe mechanical abuse. Protection can be applied to parts that have worn excessively or to flat surfaces such as table tops.

When it is necessary to fill in large cracks, notches, bruises, or seams of tanks, an activated silica filler is available to give sufficient body to the material. In combination with the filler, product may be troweled into place.

(Jet-Kote is product of Furane Plastics, Inc., Dept. CP, 4516 Brazil St., Los Angeles 39, Calif. . . . or for more information check CP 4231 on handy form, pages 2 and 3.)

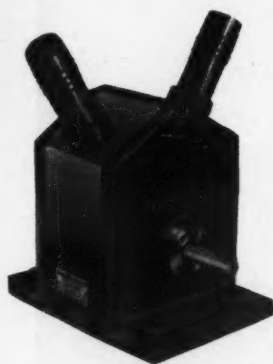
Temperatures up to 225°F resisted by corrosion-resistant Buna N hard rubber pump . . .

design of unit eliminates stuffing boxes and shaft seals

PXHR Series Pumps recently available utilize a Buna N hard rubber body block for withstanding temperatures up to 225°F, as well as the corrosive effects of many acids, caustics, and organic solvents. Design of the pump eliminates stuffing boxes and shaft seals of any sort. Neither are check valves or gaskets needed.

Fluid passing through the pump is never in contact with metal but passes on the outer surface of the Flex-i-liner and the inner surface of the body block.

Unit is activated by an eccentric rotor and shaft assembly which rides inside the flexible liner. Fluid which is trapped on the outer surface of liner and the inner surface of body block is progressively "squeezed" through the pump. Molded flanges on liner straddle the body block and are pressed to its sides by end plates sealing off the fluid passage from contact with moving parts.



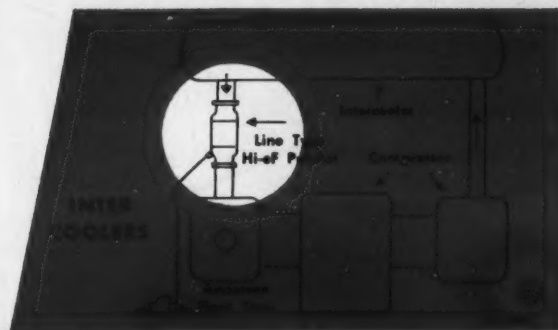
For handling corrosives

Pump was formerly available only with a polyethylene and graphite filled Bakelite. Use of the Buna N hard rubber body block not only offers additional heat resistance, but also provides more rigidity and shock resistance. Unit is available in capacities from 1/3 to 20 gpm, with a pressure range from 0 to 60 psi. All pumps are self-priming, with suction lifts up to 24" Hg.

(Product of Vanton Pump Corp., Dept. CP, Empire State Bldg., New York, N. Y. . . . or for more information check CP 4232 on handy form, pages 2 and 3.)

ELIMINATE THESE

VICIOUS ENEMIES of your CHEMICAL EQUIPMENT and PROCESSES



with Hi-eF PURIFIERS

Mist, moisture, solid particles and carryover can be as vicious an enemy as your chemical equipment and processes has ever seen. This damaging entrainment can cause product contamination in stills, contaminate coils in multi-effect evaporation, add to the cost of operating towers and columns, damage compressors, contaminate processes and shorten the operating cycles for chemical driers. Hi-eF Purifiers keep these costly trouble-makers from raising havoc with your chemical processes. These filterless units embody a new design of centrifugal separation that results in a new high in purification efficiency. Hi-eF Purifiers quickly pay for themselves in evaporators, stills, contact units, compressors, process gas and vapor line, and chemical dryer applications. Mail coupon for further details today.

THE V. D. ANDERSON COMPANY

1959 West 96th Street • Cleveland 2, Ohio

WATCHDOGS OF STEAM • AIR • GAS • VAPOR PIPELINES AND EQUIPMENT



UPFLOW
INTERNAL PURIFIER



LARGE LINE
TYPE PURIFIER



DOWNFLOW
INTERNAL PURIFIER



RECEIVER
TYPE PURIFIER

THE V. D. ANDERSON COMPANY

1959 West 96th Street • Cleveland 2, Ohio

Please send me a copy of Bulletins describing your purifiers for the chemical industry.

Name _____ Title _____

Address _____

City _____

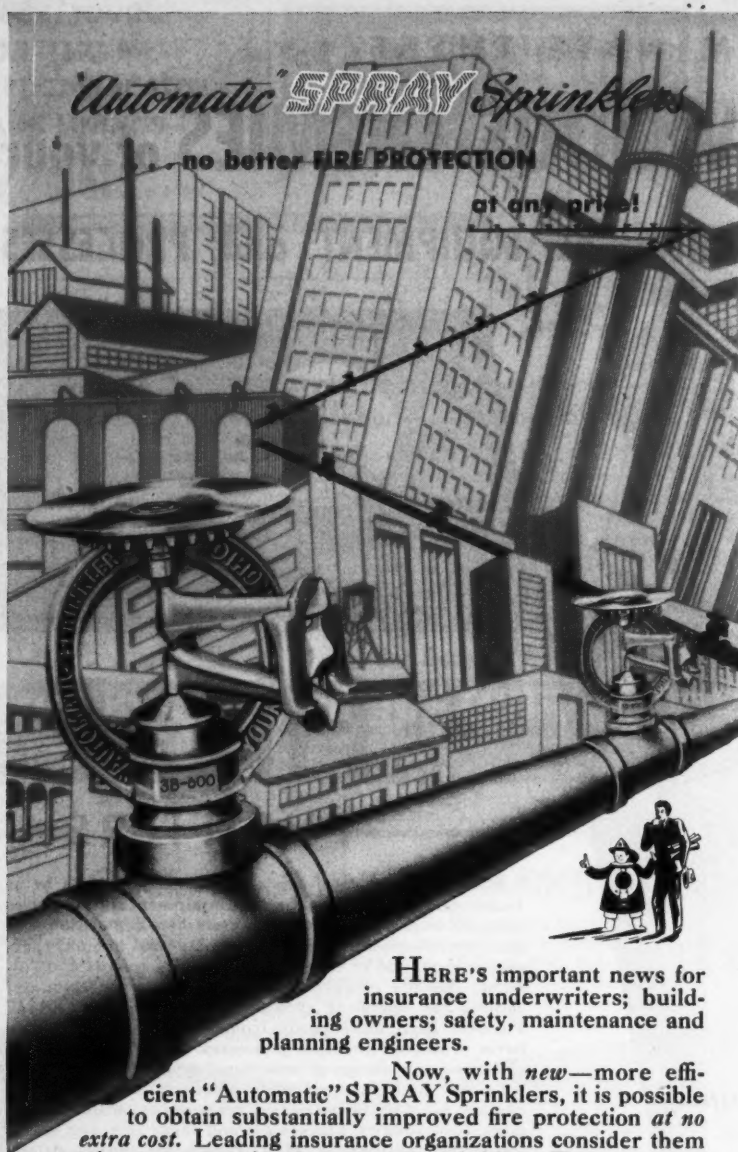
State _____

BY THE MAKERS OF SUPER-SILVERTOP STEAM TRAPS

When inquiring check CP 4233 on handy form, pgs. 2-3

Automatic **SPRAY** Sprinklers

no better FIRE PROTECTION
at any price!



HERE'S important news for insurance underwriters; building owners; safety, maintenance and planning engineers.

Now, with *new*—more efficient "Automatic" SPRAY Sprinklers, it is possible to obtain substantially improved fire protection *at no extra cost*. Leading insurance organizations consider them superior to conventional approved sprinklers. They are suggested for use on all new construction, and can easily be interchanged with obsolete devices on old style systems without expensive piping rearrangement.

In short, absolute fire safety with "Automatic" SPRAY Sprinklers is worth far more than it costs. It's a long-lasting value that knows no measure.

Better get the facts on "Automatic" SPRAY Sprinklers, the most important advancement of the century in the science of fire protection. Fill out and mail the coupon below for illustrative literature.

"Automatic" Sprinkler

CORPORATION OF AMERICA
YOUNGSTOWN, OHIO
Offices in principal cities of North and South America

"AUTOMATIC" SPRINKLER CORPORATION
OF AMERICA
DEPT. C Youngstown 1, Ohio
SEND US BULLETIN 49,
"AUTOMATIC" SPRAY SPRINKLERS.

NAME _____
TITLE _____
COMPANY _____
CITY _____ ZONE _____
STATE _____

When inquiring check CP 4234 on handy form, pgs. 2-3

Hercules Parlin Plant Receives Safety Awards

Low accident frequency over many years is not due to one program or a few ideas but results from attitude toward safety throughout plant

safety

Operator taking acid sample follows safety practice, minimizing possibility of injury



ANNOUNCEMENT that the Parlin, N. J. plant of Hercules Powder Company was top winner in the Heavy Chemicals class in the 1953 Annual New Jersey Statewide Safety Contest shows that the plant is maintaining its outstanding record in safety, which dates clear back to World War I. The low accident frequency over many years is not due to one program, a few ideas, or a few men, but to the paramount position safety occupies in the minds of the management and in

the thinking of every one of the 1900 employees.

The statement of C. George Krueger, deputy director, N. J. Dept. of Labor & Industry, that the "Hercules record was the best in the State for safety contestants," is further confirmed by a second safety award that has been received from the State since announcement of the first one. The additional award marked the completion of six months or 1,830,000 man-hours without an industrial injury.

Since this award was presented on July 15, the plant has continued to operate safely, at this writing having completed a total of 2,195,000 accident-free man-hours in the past 204 days. Another plant safety accomplishment was announced recently when the Electrical Dept. completed 25 years without an industrial injury.

The outstanding safety record at Hercules is further indicated by the following accident rate averages:

Injury Rates (Ave for 1950-52 incl)		
	Frequency	Severity
Chemical Industry	5.47	.720
Hercules Parlin Plant	1.68	.067

As shown, the Parlin Plant has an accident frequency less than one-third as great as the average for the chemical industry and a severity rate less than one-tenth that of the average chemical plant. Moreover, the type of materials handled at Parlin (nitric acid, sulfuric acid, hydrochloride acid, acetic anhydride, chlorine, and strong alkalis) class the plant with the most hazardous group.

Prior to 1950, records were kept on the basis of lost-time injuries. Although an excellent record has been maintained on this basis for 30 years or more, the change to the frequency and severity procedure used by the National Safety Council was made since it is believed to be a fairer and more accurate method.

Support for Safety

One of the principal reasons for the fine safety record at Parlin is the backing safety receives from the management. The present plant manager, W. H. Morrison, had it instilled in him that safety was the first consideration in any operation or any project when he first came to the plant as a young engineer some 20 years ago.

Safety receives similar support from other members of the management team.

The same type of training in safety is given every new employee. An employee just starting to work in the plant receives a personal talk about safety from one of the safety supervisors. Safety rules and the emphasis given to working safely in the plant are explained to him. About one month later he is given a follow-up safety talk. Meanwhile, both his foreman and supervisor have discussed safety in detail with him.

The longer service employees have become so familiar with safety practices that many of them would make excellent safety supervisors themselves. The first responsibility of any foreman or supervisor is considered to be the safety of his men. If one of their men is injured, they are held strictly accountable and must make out a written report on how the accident happened and what steps are being taken to prevent a recurrence.

Another factor favoring the safety program at Parlin is the attitude taken by the AF of L Chem-

(Continued on page 146)



in 25 years....

2,228,460,000,000
cubic feet of air delivered!

without major mechanical difficulty of any kind

**EVERY CLARAGE FAN
EVERY CLARAGE WASHER
STILL ON THE JOB!**

In June 1928, Fidelity-Philadelphia Trust Company, placed in operation its Clarage equipment—40 fans and 4 air washers.

Today the same 40 Clarage fans and the same 4 Clarage washers provide efficient, dependable ventilation for this great office building—and they are apparently good for another quarter-century of service.

In handling over two and one quarter trillion cubic feet of air, not a single replacement has been made, nor a single major mechanical difficulty encountered.

Thanks to adequate maintenance on the part of Fidelity management, this Clarage equipment has had the opportunity to prove our slogan: "You can RELY on Clarage"—RELY on Clarage to cost you far less in the long run.

Write us about your air handling and/or air conditioning needs...CLARAGE FAN COMPANY, Kalamazoo, Michigan.

**1928-1953
25th
Anniversary**

FIDELITY-PHILADELPHIA TRUST
PHILADELPHIA, PA.

CENTRAL
AIR CONDITIONING



INDUSTRIAL
HEATING



UNIT
AIR CONDITIONING



AIR CLEANING

You can Rely on...

CLARAGE



Headquarters for
Air Handling and
Conditioning Equipment

SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal

When inquiring check CP 4235 on handy form, pgs. 2-3

SAFETY

Press it down and non-slip mat is ready for use . . .

resists oil, grease, mild acids and other solvents

Uses: Non-slip walking surface for aisles, stairs, loading platforms, walkways and similar areas.

Features: Weatherproof; water-proof; and resists damaging effects of oil, grease, mild acids etc. Material withstands heavy loads.

Description: Fera-Mat is a non-slip walking surface composed of diamond-hard mineral granules bonded to a heavy-duty cloth backing. The coating of granules provides a surface with sufficient traction to eliminate danger of slipping on flat or inclined surfaces.

Installation is a simple procedure. First, a protective liner on the underside of the mat is peeled off. This exposes a pressure sensitive adhesive backing which is then pressed onto any clean, dry smooth surface. The surface is then ready for traffic.

(Fera-Mat is manufactured by American Abrasive Metals Co., Dept. CP, Irvington 11, N. J. . . or for more information check CP 4236 on form, pgs. 2 & 3.)

Fire results when ethylene oxide hits $AlCl_3$. . .

CO_2 extinguishing system prevents spread of blaze

Although no one saw the fire start, from the evidence obtained the following is a reconstruction in the chain of events in a blaze involving ethylene oxide and aluminum chloride.

In processing area of plant, there are two tanks on top platform of a building. One of these is used as a still and contains aluminum chloride and benzol; other contains ethylene oxide and benzol.

At the time the fire broke out, an employe on the main floor had opened a valve on a cylinder of ethylene oxide which normally is connected by copper tubing to the tank on the top platform. However, this tubing was not connected at the tank. The line was aimed at the floor adjacent



VENTS FOR STORAGE TANKS

Inside building vents with removable grid flame arresters approved by Underwriters Laboratories, Inc., for use within buildings. May be

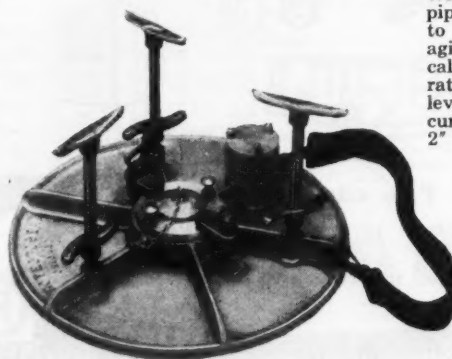


placed in vent lines near or over a process kettle, storage tank or at any location with easy access for inspection and cleaning. Standard construction is all aluminum with cast aluminum housing and aluminum baffles or grids. Also available with aluminum housing and stainless steel grids or cast iron housing with stainless steel grids. Light in weight; easy to inspect and clean; afford more positive protection in colder months because no freezing of condensate or grid structures.

TANK CAR LOADERS and UNLOADERS

Compact, durable, easily handled units which fit all tank car dome openings. Three screw lugs attach adapter securely to tank car dome.

With center cap removed, fill pipe is inserted to extend close to tank bottom for minimum agitation and vapor loss. A calibrated float rod is incorporated to indicate tank car liquid level. Syphon unloading is secured by substituting a standard 2" pipe in center opening.



THE PROTECTOSEAL COMPANY

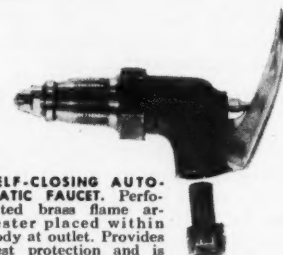
1932 South Western Avenue, Chicago 8 • In Canada: Safety Supply Co., Toronto

VAPOR

with



SAFETY CANS. Double concentric fire baffle located inside base of spout. Spring loaded cap mounted on ball and socket joint automatically makes tight, even closure; provides pressure relief. Wide, oval squeeze grip handle for controlled pouring. Sturdy seam-welded, reinforced steel body.



SELF-CLOSING AUTOMATIC FAUCET. Perforated brass flame arrester placed within body at outlet. Provides best protection and is easily removed for cleaning. Valve is outside body where valve seat is not distorted by excessive pressure. Supplied standard with Buna N, Neoprene or Thiokol gaskets; other gasket materials available upon request.



DRUM BUNG FITTING. A combination fill and vent inserted into bung opening which provides vacuum and automatic pressure relief and guards against explosion under fire conditions. Double perforated metal fire baffle extends into drum and permits refilling without danger of interior fire.

EXPLOSIONS *Can be prevented*

PROTECTOSEAL

APPROVED

Safety Equipment

Protects against explosion and fire Seals against loss by evaporation
Prevents waste in handling Speeds production

**A COMPLETE LINE FOR THE SAFE STORAGE, TRANSFER AND USE OF FLAMMABLES
IN ALL PROCESSES AND ALL INDUSTRY**



SUPPLY CANS. Double perforated-metal fire baffles at filling closure and base of flexible pouring spout. Dispensing valve located at base of spout conveniently operated at handle; gives positive control when pouring. Factory tested, seam-welded "unit" construction body.



LABORATORY CANS WITH TILT FRAME. An extra safe and convenient dispenser for accurate, dripless pouring. Easily tilted; returns to upright when released. Faucet and filler openings have perforated-metal fire baffles and self-closing, spring action closures.



LABORATORY CANS WITH BOTTOM FAUCET. Has same features and sturdy, seam-welded construction as tilt can and equipped with perforated-metal fire baffles at faucet and filler openings. Openings have self-closing, spring action closures. Shock rim at bottom elevates faucet for convenient use.



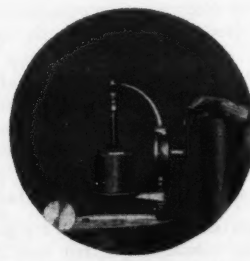
OILY WASTE CANS. Tight, seam-welded body with snug-fitting cover which closes automatically to smother fire. Cover opens wide with slight foot pressure on full width treadle; provides large opening for placing or removing soaked materials.



LABORATORY DISPOSAL CANS. Available in stainless steel or heavy terne plate. Wide 3 1/2" inside diameter spout permits easy use without a funnel; perforated-metal flame arrester at base of spout; self-closing cap with ball and socket for tight, uniform sealing; permits pressure relief.



LABORATORY SHELF CANS. New space-saving oval shape makes for greater ease in handling; permits four cans in space formerly required for three. Double-wall perforated fire baffle in spout; self-closing cap with ball and socket joint seals against evaporation, provides pressure relief.



TRANSFER PUMP. Provides complete protection against explosion and fire hazards in transferring flammable liquids. Three flame arresters: at spout, above bung adapter and at strainer inlet within drum. Light-weight aluminum alloy.

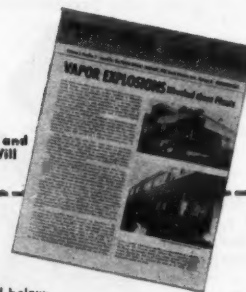
Ask for the Free Catalog and Service Material that Will Serve You Best.

The Protectoseal Company
1932 S. Western Ave.,
Chicago 8, Ill.

Please send the information checked below:

- ☐ Catalog of Safety Cans.
☐ Catalog of Safety Equipment for Bulk Storage.
☐ December, 1952 issue of Safety Bulletin with article on Vapor Explosions.

Name _____
Title _____
Company _____
Address _____
City _____ Zone _____ State _____



SAFETY

to the hatch of the tank containing the aluminum chloride. Some of this compound had evidently been spilled, for, when the ethylene oxide was projected across the room and came into contact with it, a fire broke out.

A CO₂ fire extinguishing system was activated automatically, and it smothered the fire under its range of control. The roofing caught fire and it was necessary for fire department (who had been called immediately) to extinguish it. A small section of the roof burned away over the tank. Only damage resulting to the equipment was the melting away of a small patch of lead covering on the tank, apparently at the spot where the ethylene oxide had hit tank at floor line.

There is no harmful reaction from mixing these chemicals in the still where the temperature is kept at 10°F. Tests run later outside building proved that spontaneous combustion will occur, however, when chemicals are mixed. (*Handbook of Dangerous Materials* by Sax points out that ethylene oxide vapors form explosive mixtures with air at all temps down to 20° F.)

(Information courtesy of Walter Kidde & Co., Inc., Dept. CP, Belleville, N. J.)

Smokey Stover and fire prevention

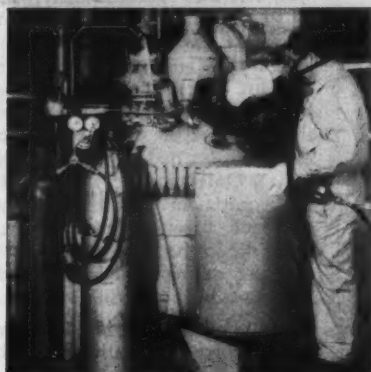
Fireman Smokey Stover will work an overtime shift this year. In addition to his regular duties, Bill Holman's famous comic strip firefighter has taken on the job of carrying a fire prevention message in the form of 15-page comic booklet. Topics include smoking in bed, oily rags, uncovered solvent cans and bad electrical habits.

Smokey Stover Booklet is issued by National Fire Protection Association, Dept. CP, 60 Battery-march St., Boston 10, Mass. When inquiring specify CP 4237 on handy Reader Service slip, pages 2 and 3.



For more information on product at left, specify CP 4238 . . . see information request blank between pages 2-3.

Scott Respirators put breathing safety where danger used to be at **HOFFMANN-LA ROCHE**



More and more plants are discovering that production work moves along with more efficiency and that down-time is kept to an absolute minimum when workers in toxic areas are assured of safe breathing with Scott Respirators.



Workers required to handle dangerous solvents, volatile acids and dusty, highly irritating powders in restricted areas use Scott Respirators for complete protection during exposures.



Scott Unit provides fresh air to worker washing kettle with streams of chloroform.



WORKER PROTECTION PAYS OFF IN SMOOTHER PRODUCTION

● Processing operations at Hoffmann-LaRoche, Inc. of Nutley, N. J. — manufacturers of chemicals and pharmaceuticals — include stages where chemical fumes create definite breathing hazards. Workers exposed to these conditions are supplied with the sure protection of Scott Respirators. No matter how hard they work, they'll always get as much cool, fresh air as they need with no fear of toxic fumes. Hoffmann-LaRoche reports highly successful results with Scott equipment. Over thirty Scott units now keep organic vapors and acid gases from damaging worker's lungs and eyes.

The company "highly recommends their use in other plants". Why not investigate their benefits to your plant safety and production?

Call your Safety Equipment Dealer today or write direct for complete information on Scott Equipment and its use in industrial operations.

Shown (right) is the Scott Air-Pak — on and ready to use in seconds. Safe protection for emergencies in dangerous, toxic atmospheres.



SCOTT AVIATION CORP.

242 Erie Street

Lancaster, N. Y.

Canada: Safety Supply Co., Toronto — Branches in principal cities
Export: Southern Oxygen Co., 157 Chambers Street, New York 7, N. Y.

When inquiring check CP 4239 on handy form, pgs. 2-3

SAFETY

Safety Awards

(Continued from page 143)

ical Workers Union in the plant. The union cooperates 100% on safety. It is considered as something that cannot be negotiated. You either have it or you don't have it. Safety has never been the subject of a union grievance.

After safety receives the enthusiastic support of management, employes, and union, the best scientific approach is used to make the plant equipment safe. Four full-time safety supervisors, some of whom are highly trained engineers, are constantly devising methods and means to prevent accidents. None of their time is spent on personnel work or other matters, but is all devoted to safety.

Safety Committee

Heart of the safety program is the safety committee. This committee of four consists of two permanent members, one of whom is from the Safety Dept. and the other from the union. The other two members, one of whom is from supervision and the other from payroll, serve rotating terms of two months, one new member joining the committee each month.

The safety committee makes a minute inspection of every nook and corner of the entire plant area of one square mile every two months. Every item, however small, that could possibly cause an injury is recorded. Reports for each area are sent to the supervisor of that area, to the union, and to the management. Items reported the previous inspection are checked, repeats not being tolerated.

The housekeeping in each area is also recorded by the safety committee. Good housekeeping is considered by Parlin as an important part of the safety program. Every year many engineering students from various colleges make tours of the plant. Invariably they may be heard to say that they have been visiting chemical plants for one or two weeks and that this is the cleanest one they have been in. They always seem amazed that such materials as strong acids can be handled by the hundreds of tons in areas that still look spic and span.

Other Factors

Although the Parlin safety program is not based on a few ideas or slogans, it recognizes the benefits to be derived from constantly fresh approaches. Safety slogan contests, housekeeping contests, posters, displays, and many types of safety literature are used. Right classification of motors, sprinklers, equipment design, safety glasses, safety shoes, close cooperation with the Medical Dept., non-sparking tools, no match rule on plant, and many other items are also very important.

Still at the base of the entire safety program is the conviction by management that they can always rebuild material things but cannot replace an eye or a hand. Some would think that such a thorough program must be very expensive. However, considering loss of time, compensation, and loss of trained men that result from accidents, the initial

HERE'S REAL PROTECTION



plus long-wearing
economy

Sawyer protective
clothing is

- * Highly resistant to all common chemical solutions
- * Not affected by grease, oil or gasoline
- * Positively will not crack, blister or peel

All Sawyer protective clothing is made with top quality base fabric saturation-coated with 6 coats of genuine DuPont Neoprene Latex*. It's tough as mulehide, too . . . takes endless rubbing, scraping, snagging and still gives full protection.

Also: Three-quarter and long coats, coveralls, aprons and many other styles. All clothing made in black and yellow.

Styles
illustrated
\$0.00 Jacket
\$1.00 Pants
\$3.00 Hat



*Sawyer fabrics are coated by
The Brunene Company, a division of

**THE H.M. SAWYER
& SON CO.**
FROG BRAND
CAMBRIDGE
MASSACHUSETTS

When inquiring check CP 4240
on handy form, pgs. 2-3

CHEMICAL PROCESSING

40% to 70% cost-saving with Edmont work gloves job-fitted to your needs

NEOX (reinforced neoprene) coated gloves fit widest range of work



Never before a glove so equally resistant to abrasion, cutting, oil, acids, solvents, caustics, degreasants and heat. Good flexibility and grip. All Edmont coatings are bonded to strong fabric linings for comfort and snag-resistance. Full coated or palm coated.

"Redmont" NEOX gloves for heaviest duty service and safe grip



Non-slip finish, cured into 30% thicker red NEOX coating, grips wet or greasy surfaces as well as dry. Longest wearing, safest of all liquid-proof gloves. Seamless wearing surface, extra wide thumb span, curved fingers.

Safety engineers approve white-fabric lined, rubber-coated Grab-Its



Tough, flexible, rough-textured natural rubber, bonded to sturdy white fabric lining, gives positive non-slip grip, wet or dry. Outwear ordinary canvas gloves up to 10 times. Far safer, too.

Grapplers grip even in grease; outwear other plastics 50%



Coated with DUROX, a leather-like reinforced plastic that retains its grip when wet, is extremely resistant to abrasion, oil and coolants, and stays flexible. Perfect fitting, too. Note wing thumb and curved, pre-flexed fingers.

Hand-fitting Monkey Grips far outwear leather, ordinary plastics



Special Edmont vinyl coating is second only to "DUROX" in wearing qualities and grip. Same wing thumb and pre-flexed finger design as "Grappler" gloves; fit the hand all over.

Make this **FREE TEST** to cut your costs, improve safety. Send us a brief description (on business letterhead) of your operations, materials handled, and temperature condition. Without cost we will recommend the proper glove and forward samples for testing on the job.

Edmont Manufacturing Company
1204 Walnut Street, Coshocton, Ohio

World's largest maker of coated industrial gloves



Edmont job-fitted gloves

SAFETY

cost of the safety program is far overshadowed by the savings.

(Courtesy of Hercules Powder Company, Department CP, Wilmington 99, Delaware.)

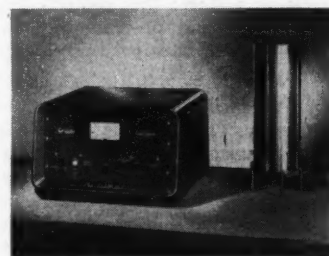
**Can locate ion chamber
100 feet away from
main chassis . . .**

provision made for an external alarm system

Uses: Measurement of relatively high gamma or neutron flux around reactors and accelerators.

Features: The 4000 cc ion chamber may be located either at the main chassis or up to 100 feet away — allowing the unit to be used in places of high radiation level without any danger of exposure to the operator.

Description: Model 1310 Remote Monitron consists of an ion chamber and a main chassis. The panel meter provides visual indica-



Indicates gamma or neutron radiation up to 125 mr/hr

tion of gamma or neutron radiation up to 125 mr/hr.

A panel "alarm" light indicates any meter reading arbitrarily preset from 5 to 125 mr/hr. Provision is made for the operation of an external alarm system, such as a bell, simultaneously with the functioning of the alarm panel light. An external chart recorder may also be connected to the unit so that a written record is available of radiation level vs time.

(Announced by Nuclear Instrument and Chemical Corporation, Department CP, 229 West Erie Street, Chicago 10, Illinois . . . or for more information about this development, reader may simply check CP 4242 on handy Reader Service slip between pages 2 & 3.)



NEW 64-PAGE CATALOG

CESCO
safety equipment

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Your CESCO Safety Equipment Distributor will gladly furnish you a copy. Or write us direct.

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Chemical

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Cup-type

Dust

Flash

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Headgear-Type

Plastic

Prescription

Spec-Lite

Spectacle-Type

Speed-Shift

Spot Welders

Welders

Wide Vision

Wire Screen

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CHICAGO EYE SHIELD COMPANY • 2316 Warren Blvd. • Chicago 12, Ill.

CESCO FOR SAFETY

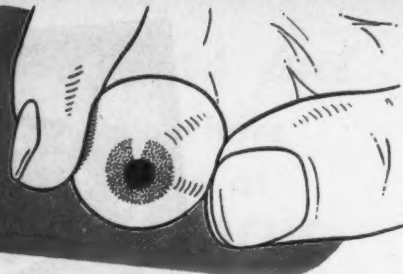
OFFICES IN: Atlanta, Birmingham, Boston, Buffalo, Cincinnati, Cleveland, Columbus, Detroit, East Orange, Houston, Indianapolis, Kansas City, Knoxville, Little Rock, Los Angeles, Mexico City, D. F., Milwaukee, Montreal, Peoria, Philadelphia, Pittsburgh, Salt Lake City, San Francisco, Spokane, St. Louis, St. Paul, Toledo, Tulsa

When inquiring check CP 4241 on handy form, pgs. 2-3

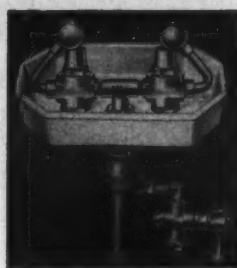
OCTOBER, 1953

When inquiring check CP 4243 on handy form, pgs. 2-3

Protect PRICELESS VISION



with HAWS Eyewash Fountains!



The damage inflicted by accidents involving chemicals and other materials in the eyes can be greatly minimized with HAWS Eye-Wash Fountains installed in your plant for instant first-aid. Without them permanent damage or complete loss of sight may occur while waiting for treatment. This unit is also available with instantaneous drench-shower. Priceless protection at a cost of a few cents per worker.

• Designed in cooperation with, and approved by, leading Safety Engineers.

Ask your plumbing contractor or write for complete details.

HAWS

HAWS DRINKING FAUCET CO.

1419 FOURTH STREET (Since 1909) BERKELEY 10, CALIFORNIA
Agents and Sales Representatives in All Principal Cities

When inquiring check CP 4244 on handy form, pgs. 2-3

Meet the Schedule!

Use **PIONEER Stanzails®**

When employees hands are comfortable and properly protected by the *right* gloves for the job:

- there are fewer work stoppages
 - injury claims decrease
 - work goes faster, production increases
- all at lower per hour glove cost to your plant!

Long-wearing liquid-tight neoprene Stanzoil industrial gloves resist damage from acids, oils, solvents, caustics. 32 styles, weights, sizes, colors. New PIONEER catalog shows you *at a glance* how to select the most efficient and economical gloves for each operation. It pays you to write for your copy today.

Industrial Products Division

The PIONEER Rubber Co. 241 Tiffin Road Willard, Ohio

Quality Gloves for over 30 Years



N-36 medium weight all neoprene glove, 11" length. Snug curved fingers, non-slip grip surface afford almost bareband dexterity.



When inquiring check CP 4245 on handy form, pgs. 2-3

SAFETY

Opens at once to 160° full fog position

Uses: Combatting fires.

Features: Fog nozzle opens from a shut-off position immediately to a 160° full fog position.

Description: Akr-O-Mist Industrial Fog Nozzle is made for 1½" hose. As seen from accom-



panying photo, the nozzle produces a wide curtain of water for smothering fires, and dispersing poisonous fumes, gases and smoke as well as flammable vapor-air mixtures. The spray works in reverse, also, by creating a shield that protects the fire fighter and prevents the fire from flashing back over previously extinguished areas.

By producing a vapor instantaneously, the nozzle prevents water damage to plant equipment and inventory caused by a heavy solid stream of water. Nozzle employs a double shut-off—turning it to the extreme right or left shuts off the water stream.

(Available from Akron Brass Mfg. Co., Dept. CP, 1450 Spruce St., Wooster, Ohio . . . or for more information about this development check CP 4246 on handy form, pages 2 and 3.)

No alarm system or piping needed with extinguisher . . .

self-contained and provides fully automatic protection

Uses: Fire extinguishing unit for all classes and types of fires.

Unit is recommended for closed area "danger spots" such as storage rooms, motor rooms, and work shops. A carefully planned installation of the units is also claimed to provide complete pro-

ELECTRICALLY-CONTROLLED



AIR CYLINDER

IS FULLY EXPLOSION-PROOF

Here's the answer to electrically-controlled air cylinder operation in explosive hazardous areas: The Bellows BEXM Explosion-Proof Air Motor.

It meets fully group D, Class I Standards of the National Board of Fire Underwriters.

Made in five bore sizes: 1¼", 1¾", 2½", 3¾" and 4½" — any stroke length — with valve directly connected to the air cylinder or arranged for remote control.

Write for Bulletins AVX-310 and CL-50 today. Free on request. Address Dept. CP1053.



The Bellows Co.

AKRON 9, OHIO

When inquiring check CP 4247 on handy form, pgs. 2-3

What's

A "New Solution"?

It's an article in **CHEMICAL PROCESSING** describing a new way of solving a tough plant operating problem. In each issue you will find specific "case histories" showing how these processing problems were solved. Each article states the operating problem . . . explains the process used and gives details of how problem was solved . . . shows results secured.

Take a look at "New Solutions" articles in this issue — they might suggest a "solution" for some of your tough processing problems.

SAFETY

tection against practically any hazard in open areas as well.

Features: Unit is hung from the ceiling on a bracket and requires no other parts — no piping or alarm systems are needed.

Description: Firetox automatic fire extinguisher consists of a 3 quart aluminum container which holds 2 quarts of carbon tetra-



Unit which requires no piping or alarm system affords fire protection to 120 square feet of space

chloride and 12 ounces of special ammonium hydroxide. It is equipped with a sprinkler head at the top.

Unit is fully automatic and operates similarly to a water sprinkler. When the heat from a fire reaches 165°F, a solder fuse melts. This releases the nozzle cap while the ammonium hydroxide develops pressure within the extinguisher. The pressure forces the carbon "tet" against a spreader which atomizes it into the air.

Each unit protects an area 120 square feet in size.

(Firetox is available from Standard Safety Products Co., Dept. CP, PO Box 2111, Lansing 11, Mich. . . . or in order to secure more information about this product, reader may simply check CP 4249 on handy form between pages 2 and 3.)

For more information on product at right, specify CP 4250 . . . see information request blank between pages 2-3. ➡

UNIFORMS OF ORLON

STILL IN GOOD CONDITION AFTER 6 MONTHS IN ACID PLANT!

For the past six months, this man has worn the uniform of "Orlon" shown here while helping to operate a lead chamber process for making sulfuric acid. This lightweight uniform is still in excellent condition despite fumes and accidental splashes that ruined ordinary work clothes within weeks!

Nine other men at this plant have had similar experience with uniforms of "Orlon" in their job of making acid for a leading fertilizer manufacturer. In the course of a day, the uniforms of the chamber operators and lead burners are often exposed to 60° Baume sulfuric acid at temperatures up to 150°F. Yet they were not damaged, thanks to the exceptional acid resistance of "Orlon" acrylic fiber.

Equally important are the ease of care and comfort of these uniforms. The men report that they can conveniently have them washed at night . . . wear them the following day. And even in any kind of weather, the uniforms are comfortable. Uniforms of "Orlon" have meant a saving in money for the men, too. Even though they cost more originally, the uniforms have more than paid for themselves in longer wear and lower upkeep costs.

For full information about uniforms of "Orlon" and other industrial applications of "Orlon" write: E. I. du Pont de Nemours & Co. (Inc.), Room 2522P, Wilmington 98, Delaware.

ORLON is Du Pont's trade-mark for its acrylic fiber



BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY



ADDED FEATURE in Midget 2 & 3 Way
Solenoid Valves

ASCO EXPLOSION-PROOF

protection for Personnel, Production & Plant

ASCO Midget Valves are now available with explosion-proof housings, designed in accordance with Underwriters' recommendations for use in Class I, Group D hazardous locations.

These Bulletins 8262 & 8314 ASCO Valves with the Explosion-Proof Solenoid Enclosure (they're also water tight) may be just what you need. Classed as "small" valves, they are doing a big job in the automatic and remote control of air, gas, water, light oils, refrigeration and other fluids.

BULLETIN 8262

2-Way Valve Normally Closed**

(Available for all commercial and industrial voltages)

Body Material	Brass or Stainless Steel	
Pipe Sizes (in.)	1/8	1/4
Orifice Diameters (in.)	1/16 1/8 5/32 3/16	
Maximum Pressures	A-C 300* 130 90 60	
lbs./sq. in. D-C 250 70 50 30		

*Available 1000 psi in stainless steel; 500 psi in brass
**Also available normally opened

BULLETIN 8314

3-Way Valve

(Available for all commercial and industrial voltages)

Body Material	Brass or Stainless Steel	
Pipe Sizes (in.)	1/8	
Orifice Diameters (in.)	3/64	3/32
Maximum Pressures	A-C 125 45*	
lbs./sq. in. D-C 50 25*		

*Pressures slightly lower for liquids

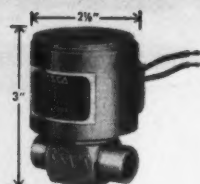
Write for free pamphlet
"Small Solenoid Valves."



Automatic Switch Co.

379 LAKESIDE AVENUE · ORANGE, NEW JERSEY

When inquiring check CP 4251 on handy form, pgs. 2-3



Bulletin 8262 Two-Way ASCO Solenoid Valves (illustrated) can be obtained with by-pass and metering devices. Valves can be installed in any position. Bulletin 8314 Three-Way Valves can be applied to any 3-way valving requirement regardless of flow directions or pressure application points; no change of springs or other adjustments are necessary. These valves can also be mounted in any position and will give positive tight shut-off.

Since 1888 ASCO Engineers have specialized in the constantly expanding field of Electromagnetic Controls. They have pioneered many new developments and have revolutionized many of the older concepts of automatic control. Industry looks upon ASCO as one of the leaders in Electromagnetic Controls. Why not let our engineers help you with your problem whether it involves control on a machine of any kind you are designing or control of liquid or gas in your plant?

We also manufacture other types of Electromagnetic Controls including Automatic Transfer Switches, Remote Control Switches, Contactors, Relays and Control Panels.

SAFETY

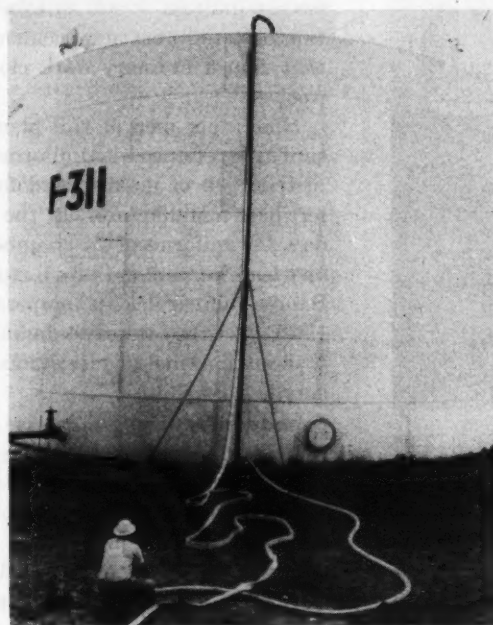
Hydraulically operated foam tower speeds tank protection, saves manpower . . .

tower may be used for tanks of varying height; easily convertible to chemical foam use

Uses: Combatting flammable liquid tank fires.

Features: Unit is raised and lowered by hydraulic action and can thus be set up in a fraction of the time formerly needed with manually operated towers. Additionally, manually operated towers usually require the services of 12 to 15 men; in contrast, the hydraulically-operated tower can be handled by four men — an important factor when both time and manpower may be lacking.

Description: National Hydraulic Foam Tower may be used for tanks of varying height, and a simple conversion operation, easily accomplished in the field, adapts the tower for chemical foam use.



Foam tower shown above is raised and lowered by hydraulic action

The unit is extremely compact in its lowered position and is easily transported to the base of a tank. After hose is connected, all operations, including the raising of the tower, are controlled at a safe distance from the burning area.

When the tower is elevated to a point above the upper edge of a tank wall, pressure is released and the tower gradually descends until the gooseneck is hooked over the edge of the wall. Foam is then discharged against the inside of the tank wall, and flows across the burning surface.

Unique construction of the base of the tower gives stability and rigidity in three directions. A scissors-type frame prevents the tower from moving except toward the tank itself.

Fitting Solution



Send for your

Koncentrik

CATALOG TODAY!

"Over 1200 tube fittings in Stainless or Monel"

You'll want to complete your data file with this handy, dual purpose catalog. Covers both parts specifications and technical information on Koncentrik flared-tube fittings... the only line that gives you DOUBLE protection against dangerous leaks with the patented, Teflon-reinforced seat. Over 1200 combinations listed, for tubing through 1" O.D. Literature also available covering Powell valves with machined-in Koncentrik connections. Write today.

THE SPECIAL SCREW PRODUCTS CO.

5445 Dunham Rd., Bedford, Ohio

When inquiring check CP 4253 on handy form, pgs. 2-3

CHEMICAL PROCESSING

OCECO

Flame Arrestors

are a

DEPENDABLE

Flame Stop

● These arrestors combine the desired flame stoppage and explosion prevention with minimum pressure drop. Sturdy, rugged semi-steel housings and covers. Corrosion resistant aluminum "banks" have vertical straight through passages, minimizing clogging and simplifying inspection;—extensible for easy cleaning. 2" to 10" sizes. Write for Bulletin No. 471-R. It gives full details.

OCECO

TANK FITTINGS

THE JOHNSTON & JENNINGS CO.
division of PETTIBONE MULLIKEN CORP.

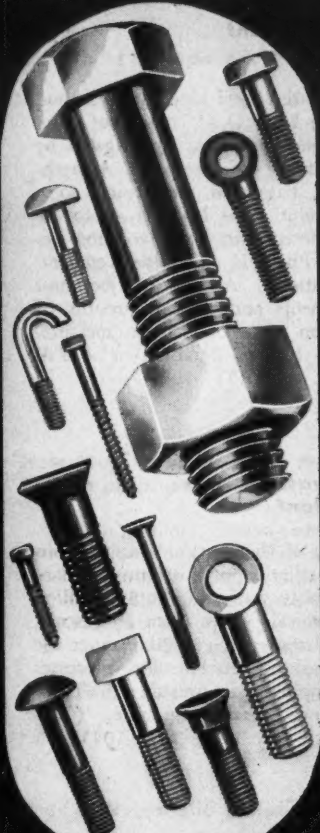
4751 West Division St. • Chicago 51, Illinois

When inquiring check CP 4252 on handy form, pgs. 2-3

UNIFORM CLASS 3 FIT

BOLTS·NUTS STUDS

- Carbon Steel
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- Stainless Steel
- Monel Metal



You can depend on a uniform Class 3 fit when you buy Pawtucket threaded fasteners. Standard items or specialties—all Pawtucket products are accurately made in standard dimensions or to your specifications. Heat treating with precision-controlled modern equipment.

BETTER BOLTS SINCE 1882

PAWTUCKET

THE BOLT MAN[®]

327 Pine Street Pawtucket, R. I.
THE PLACE TO SOLVE YOUR BOLT PROBLEMS

When inquiring check CP 4254 on handy form, pgs. 2-3

SAFETY

Towers are equipped with manufacturer's Selective Orifice Foam Maker which allows use of lower pressures to produce foam than would otherwise be possible. System can therefore be adapted to meet existing water pressures without the expense of a booster pump.

(Tower is development of National Foam System, Inc., Dept. CP, Union & Adam Sts., West Chester, Pa. . . . or for more information check CP 4255 on convenient Reader Service slip located between pages two and three.)

**Small size, light weight
are features of Hg
vapor detector . . .**

after few minutes for lamp warm-up and setting of sensitivity, instrument ready for use

Uses: Surveying room atmospheres for dangerous concentrations of mercury vapor.

Features: Small size: 13 x 8-1/4 x 4 1/2"; light weight: models range from 5 to 8 lb in weight. Operation is simple as all that is required is a few minutes for lamp warm-up and setting of the sensitivity against the internal standard.

Description: Kruger Mercury Vapor Meter is a portable, line-operated photoelectric type. Operation is based on the principle that mercury vapor will absorb light of 2536 Angstrom units in proportion to its concentration. A low pressure type mercury vapor lamp will produce almost pure light of this wave length. In the Kruger type the light source and a photocell are at the far ends of the instrument case. Between them is an open space, protected by a grill in some models, through which room atmosphere may pass. Any mercury vapor present reduces the amount of light reaching the photocell. Manufacturer states that through design used, there is no effect from ambient light.

Models No.'s 21, 22, 23, and 24 are offered by manufacturer with following range of sensitivity in mg/cu m:

21	22	23	24
0.03-3	0.005-0.1	0.005-0.1 0.03-3	0.005-0.1 0.03-3

Model 24 in addition to offering a dual range like 23 has an alarm which will go off at any preset range.

To perform a test the instrument is held in the area suspected of being contaminated with mercury vapor and the concentration may be read off the calibrated meter directly.

Power requirements are 21 w for model 21, and 25 w for the other three models. All models are supplied with permanent standards for each range thereby eliminating the need for periodic standardization with a known concentration of mercury vapor. (Available from Harold Kruger Instruments, Dept. CP, Box 164, San Gabriel, Calif. . . . or for more information check CP 4256 on handy form, pages 2 and 3.)

Avoid losing money on chemical-resistant clothing

Test DYNEL garments under your own conditions . . .

If DYNEL Garment-Life is greater than
Present Garment Life X Cost of DYNEL
Cost of Present Garment
then you are losing money on your
present industrial clothing!



Wherever work garments deteriorate from exposure to chemicals DYNEL offers economy—in coveralls, jackets, trousers, and socks. Available in a range of weights and constructions suited to varying working conditions—indoors or out, hot or cold. Your choice of attractive solid shades.

DYNEL'S superior performance

1. Unaffected by most chemicals
2. Strong—wet or dry
3. High abrasion resistance
4. Washable—won't shrink or stretch
5. Long laundry life
6. Will not support combustion
7. May be cleaned or decontaminated in acids without harm

cuts costs!

20-hour Immersion tests prove

DYNEL'S amazing chemical resistance

Write for results of 20-hour immersion tests in 57 different chemicals (acids, bases, oxidizing agents, solvents). DYNEL industrial clothing, thanks to its built-in chemical resistance, has outworn clothing of other fibers in the same service by as much as 10 to 1. For a list of manufacturers of DYNEL industrial clothing, the DYNEL Chemical Resistance Folder, and complete data on Immersion Tests, write:

Textile Fibers Dept., P1, Carbide and Carbon Chemicals Company,
A Division of Union Carbide and Carbon Corp., UCC 30 East 42nd St., New York 17, N. Y.

Performance will tell . . . it's DYNEL

When inquiring check CP 4257 on handy form, pgs. 2-3

AIMING TO CLEAN TUBES
AS SMALL AS 1/4" ID?



WILSON
PISTOL GRIP
hits the smallest target

Cleaning small tubes is often a difficult production problem in refinery and chemical plants. But Wilson Engineers have developed a fast, efficient, low-cost solution in the Pistol Grip Tube Cleaner, which thoroughly removes deposits from tubes as small as 1/4" ID. This production tool is another Wilson first in tube cleaning equipment.

The Pistol Grip weighs only 3 lbs.—no more than a 12" Stillson wrench. It provides the operator with one-hand control for cleaning small, straight tubes of 1/4" to 1" ID in sterilizers, hot water heating units, lube oil heaters, oil pre-heaters, heat exchangers and other small bore tube apparatus.

Write for Bulletin 1046

Wilson S Series Air or Steam Motors were specially designed for cleaning small straight tubes from 3/8" OD to 1 1/4" OD. They have ample power and speed for fast, efficient removal of any deposit within their capacity and will work equally well in ferrous and non-ferrous tubes.

S Series Air or
Steam Motor
with Model "A"
Unit Cutter Head



Representatives in all principal cities

THOMAS C. WILSON, INC.

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Cable address: "Tubeclean" New York

WILSON

TUBE CLEANERS • TUBE EXPANDERS

When inquiring check CP 4258 on handy form, pgs. 2-3

Briefs . . . from contemporary publications

Here's a quick look at interesting articles appearing in other publications,
... as selected by the editorial staff of CHEMICAL PROCESSING

Plastic pipe for water service

Great potential plastic pipe holds for handling water, as well as gases and chemicals is pointed out. Experience with cellulose acetate butyrate, polyethylene and rigid polyvinyl chloride is discussed. Paper indicates rigid vinyls may have best possibilities for use in water systems. 5 pages. (*Journal American Water Works Ass'n*, July '53, page 757)

Va-Purge process in pulping of wood—a symposium

Symposium discusses aspects of the Va-Purge process for chemical wood pulping: what it is, how it can be adapted to conventional equipment, results obtained while using it for straw pulping in corrugated board manufacture, and how it can be applied to continuous pulping. Consists of abridged versions of four papers presented before the 1953 summer meeting of the Technical Section of the Canadian Pulp and Paper Association. 9 pages, 11 figures, 1 table. (*The Paper Industry*, July 1953, page 450)

Processing rubber at curing temperatures

Paper discusses phases of compounding which are related to scorch and cure time. Evidence supports that both maximum scorch time and vulcanization time are characteristics of a compound and are dependent primarily on the accelerator, but also to some extent on the sulfur ratio, pigments, etc. Conclusion is that if processing heat can be adequately controlled, stocks can be processed at curing temperatures or higher. 8 pages, 11 figures, 13 tables. (*Rubber Age*, June 1953, page 361.)

Protective paper coatings

Article discusses the methods and materials available for coating paper, pointing out the special applications, advantages and disadvantages of each. Outlook for new and improved coated paper is also covered. 7 pages, 6 photos. (*Paint & Varnish Production*, July '53, page 19)

Determines Phase I content of sodium triphosphate

A Temperature Rise test used as a plant method for determining the $\text{Na}_2\text{P}_2\text{O}_7$ -I content of commercial sodium triphosphate was investigated by thermal and conductance measurements. A mechanism is suggested, based on the greater solubility and rate of solution of $\text{Na}_2\text{P}_2\text{O}_7$ -I, to explain the great difference in heat evolution between Phase I and Phase II under the Temperature Rise test conditions. Author describes heat evolution measurements and discusses results of the heat of solution and conductance measurements. 4 pages, 4 figures, 2 tables. (*ASTM Bulletin*, July '53, page 45)

Handling supply, waste waters at petrochemical plant

Article covers some of the specific considerations leading to final installation of a system for handling supply and waste waters at the \$50-million National Petro-Chemicals Corp. plant at Tuscola, Illinois. Author discusses in general manner the wastes from the various petrochemical processes and the means employed in treatment. Three pages, with one flow diagram, one table. (*Petrochemical Processing*, July 1953, page 1045)

New heat-resistant phenolic resin

Article covers results of project performed for the Air Force and describes new low-pressure laminating resin having elevated temperature resistance. Material is adaptable to both low, moderate and high-pressure molding techniques. Applications, types available, properties, fabricating techniques and curing procedures are discussed. 3 pages, 1 table, 3 figures. (*Modern Plastics*, August '53, page 121)

Mixed-bed ion exchange

Part 1 of a 2-part symposium discusses theory of mixed-bed ion exchange and factors to be considered in design of production units. 8 pages, 8 figures, 6 tables. (*Chemical Engineering Progress*, July 1953, page 341)

Safe storage of chlorine

Paper deals with the technical principles pertaining to the storage of liquid chlorine in stationary vessels. Pressure vessels, pipelines, loading and maintenance are described in detail, with emphasis on safety. 7 pages, 3 figures. ("Journal American Water Works Ass'n", July '53, p 738)

Variables in impact tests

Paper summarizes effects which variables in specimen geometry and testing procedures may produce on results of notched bar impact tests and describes procedure used at the Watertown Arsenal Laboratory in inspecting and testing of standard V-Notch Charpy impact test specimens. Various steps in test procedure are considered in detail; features that could cause incorrect values are pointed out.

5 pages, 10 figures, 1 table. ("ASTM Bulletin", July '53, page 60)

How they treat effluents from English pulp, paper mills

English authors discuss latest stream pollution legislation in Great Britain and the ways in which pulp and paper mills in that country are meeting the effluent problem. Large part of article has to do with reduction of BOD of various pulping and de-inking machines and white water. 4½ pages, 1 figure. ("Paper Trade Journal", July 31, 1953, page 16)

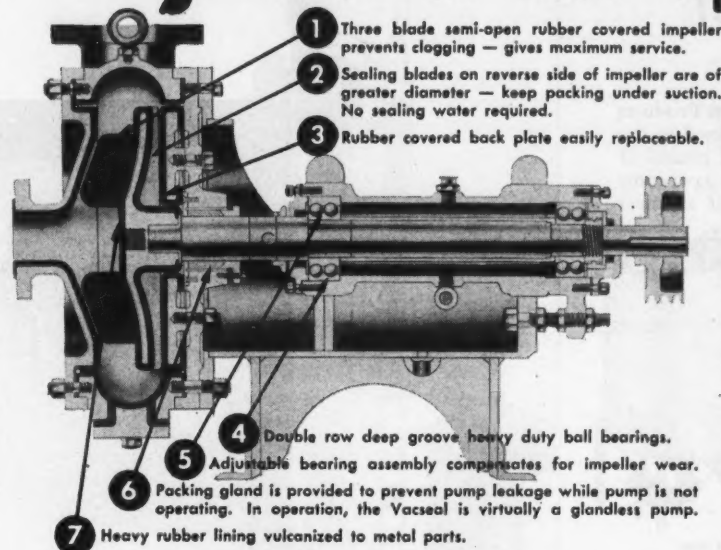
Uses of Nylon and Teflon

Property characteristics and advantages of Nylon and Teflon plastics for industrial use reviewed. Instances cited for applications of Nylon for bearings, bushings and pulleys, and as tips on paper pulp cleaner. Teflon applications and considerations also included. 3 pages, 4 photos. ("Plant Engineering", August 1953, page 73)

Oxidizing catalysts in service

Performance report on oxidizing catalysts (Houdry Oxycat, etc) during past 20 years contains operating and cost data. Most recent catalyst type has been in flue gas oxidation service for more than one year — efficiency is apparently unchanged. Costs, efficiencies and operating data are given. 2 pages, 4 figures. ("The Petroleum Engineer", August 1953, page C-15)

7 features that equal 1 fact



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Foreign Mining Districts

When inquiring check CP 4259 on handy form, pgs. 2-3

VACSEAL PUMPS
are built to
serve better

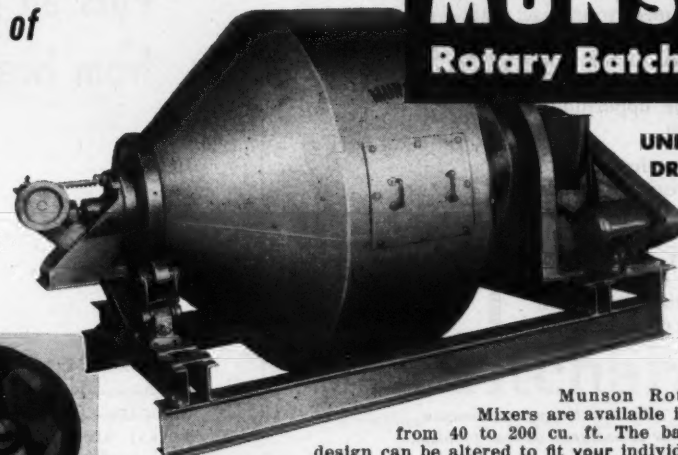
The Vacseal Pump, built to handle efficiently all types of acid, corrosive and abrasive pulps, is proving itself a boon to the chemical process industries. Its patented design prevents solids from entering the head. It is virtually a "glandless" pump, requiring NO SEALING WATER.

VACSEAL is in a size range of 2" to 8". Capacities 50 to 3000 gpm. Models to handle heads up to 150 feet and suction lifts to 12 feet.

Write today for Bulletin PB-52.
Get all the facts.

MIX IT better ... MIX IT faster ... MIX IT with a
... the TUMBLING ACTION mixer for
intimate blending of
dry ingredients

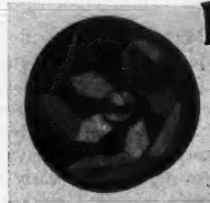
MUNSON
Rotary Batch Mixer



UNEQUALLED FOR DRY MIXING OF:

Chemicals,
Fertilizers, Feeds,
Cereals, Gelatin,
Glue,
Soap Compounds,
etc.

NO OTHER MIXER HAS THIS MULTIPLE-BLENDING ACTION!



Lifters on inside of truncated cone ends continuously cut out and lift ingredients as drum slowly revolves. Rotating cone tumbles stock toward center. Conveyor flights on mixer shaft also stir and agitate stock back to center of drum — where mixing cycle repeats.

Munson Rotary Batch Mixers are available in capacities from 40 to 200 cu. ft. The basic Munson design can be altered to fit your individual requirements — for overhead, working floor or basement installation. Munson engineers — skilled in processing procedures — will be glad to assist in solving your mixing problem. For full information, write us today ...

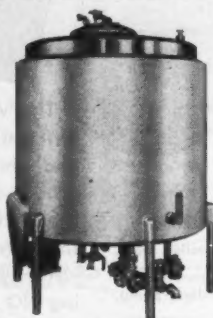
Other famous MUNSON products: Rotary Knife Cutters, Hammer Mills (25 to 100 HP), Attrition Mills (24" to 30"), Rotary Crushers ...

MUNSON MILL MACHINERY CO. Dept. P-1053 Utica, New York

When inquiring check CP 4260 on handy form, pgs. 2-3

What's eating your stainless steel tanks?

For more than a quarter century Metal Glass Products Company of Belding, Michigan has specialized in the manufacture of stainless steel tanks for all phases of the processing industries. In that time they have come to know the advantages and limitations of stainless steel fabrications for industry. The design engineers at Metal Glass realize that stainless steel is not the cure-all to corrosion and wear that many believe it to be. They know that there are many acids, salts and organic substances that will attack stainless steel tanks. They realize that special care must be taken in every step of installation and fabrication to keep their tanks unaffected when used with various liquids. The performance of the units in actual plant operation depends to a large extent upon the manner in which the installation was made and the daily treatment accorded the equipment.



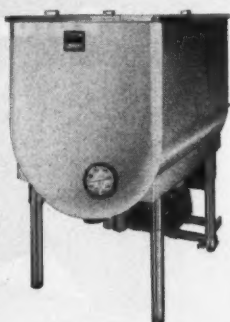
TYPE "CX"



TYPE "CP"

For these reasons Metal Glass attempts to make every unit a custom built model. Even the standard items illustrated in this article are precision built. Despite the care exercised in building standard units, there are many applications that call for a specially designed piece of equipment. It is in cases like these that it pays to call on Metal Glass. Our engineers working with your personnel can develop a tank to meet your exact requirements. Our engineering department is set up and maintained to help you on your special tank problems. We welcome the opportunity to work with you.

In addition to experience in the specific characteristics of metals with reference to corrosion resistance, heat transfer and general machinability, we can offer you considerable knowledge in insulating materials, types of refrigerants and metalizing processes.



TYPE "CHB"

Write us today for assistance or consultation on your problem.

STAINLESS STEEL SAN-I-TANKS

METAL GLASS PRODUCTS COMPANY

BELDING 11, MICHIGAN

DISTRICT OFFICES: New York • Chicago • Atlanta • Detroit
Pittsburg • Pasadena • Toronto

When inquiring check CP 4261 on handy form, pgs. 2-3

construction and maintenance



Steel grid trowelled flush with mastic stands up to heavy rolling loads in traffic lanes of curing room at Monarch Rubber Company, Baltimore, Md. Although heavy steel trimming plates fall from this table frequently, floors show no noticeable effect

Puts an end to concrete floor deterioration from heavy rolling loads, oils, and heat

Resurfacing with steel grid and mastic restores lift truck traffic lanes to speedy, safe handling of materials

PROBLEM: Concrete floors at the Baltimore, Maryland, plant of the Monarch Rubber Company (manufacturers of plastic shoe sole stocks) are subjected to continuous heavy lift-truck traffic. This is especially true in the curing room — trucks bring in heavy loads of uncured stocks for curing, and similarly they remove heavy palletized loads of cured stock to storage. High temperatures in the curing room and continuous drip of mold lubricants and truck lubricants add further deteriorating effects to the floors.

Four years ago the heavily travelled traffic lanes

had become so badly rutted, eroded, and disintegrated from the combination of heavy loads, heat, and oils that some immediate floor reconditioning or resurfacing means had to be taken to assure safe and speedy movement of laden trucks. Monarch Rubber Company was fully aware of the conditions causing its problem and set about to find the best means for solution.

Solution: After careful investigation of the flooring maintenance field they finally settled upon a combination of two products as their most likely prospect: Floorsteel steel grid (for structural

strength) trowelled flush with Numastik Bond heavy duty mastic (for resistance to oils, grease, and high temperatures).

Floorsteel grid is flexible and rolls out like a rug. It is made up of high-quality steel strip 0.065" thick and woven by means of stringing wires into a square-shaped pattern to give a grid $\frac{3}{8}$ " in depth and a mesh size of $1\frac{1}{4} \times 1\frac{1}{4}$ ". It comes in standard rolls 25' long and either 47 $\frac{1}{2}$ ", 60 and 72 $\frac{1}{2}$ " wide, and special widths in multiples of 2 $\frac{1}{2}$ " up to 72 $\frac{1}{2}$ " maximum. It trims readily to irregular shapes and obstructions by cutting the ribs and pulling out the wires as may be required. For long runs, ends of two rolls, or sides of two adjacent rolls, can be joined by pulling a stringing wire, meshing the two grids together, and replacing wire.

Numastik Bond mastic flooring is recommended for use alone or in combination with a grid, as is the case here. It is used for repairing or completely resurfacing either wood or concrete floors. It bonds very well to new or old surfaces, feathers out to a thin edge, and is especially noted for good resilience and resistance to oils, greases, acids, water, and heat (when supported by a grid).

Willing at first merely to try this combination out in a test area, Monarch Rubber officials selected a particularly bad rutted area in a heavily travelled traffic lane and had it resurfaced. Here are the steps taken in resurfacing:

All loose and broken portions of concrete were removed from the test area, followed by levelling and restoring to normal floor level with a concrete grouting. Floorsteel grid was next rolled out over the test area, trimmed to size, and then anchored to the concrete base with power-fired pins. Last step was to trowel Numastik Bond mastic flush with the grid.

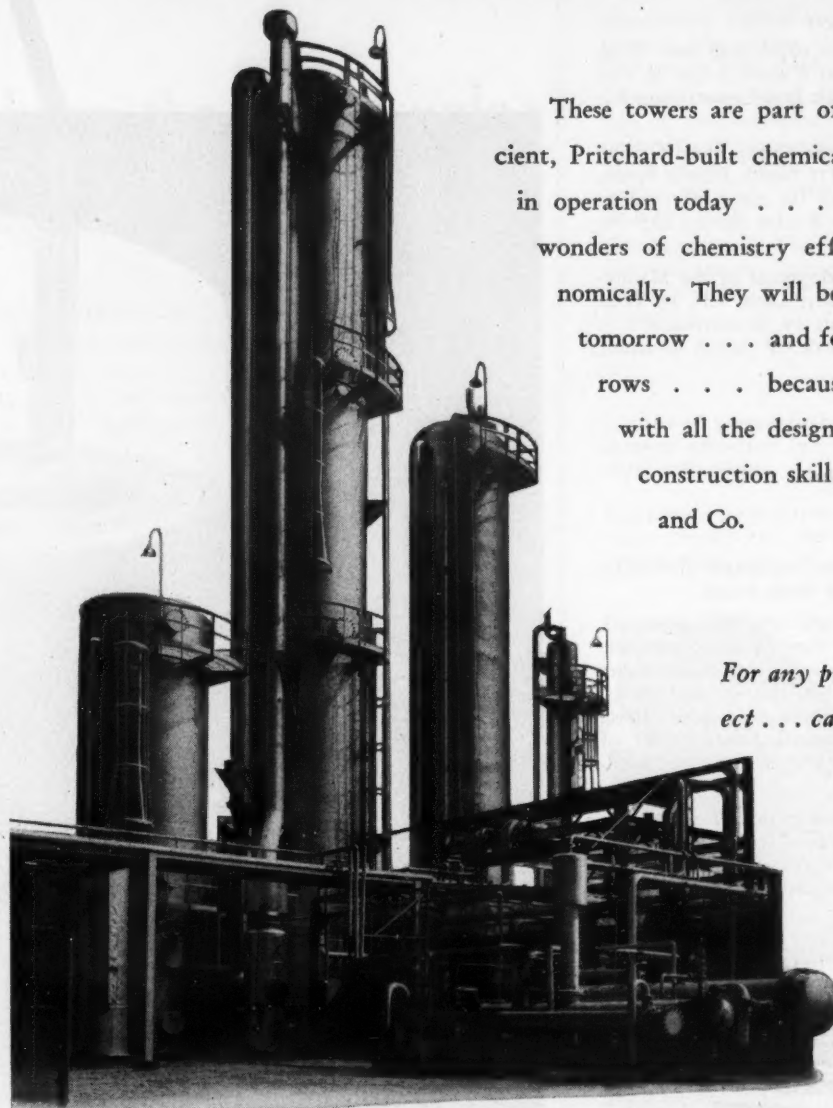
Shortly after the test area was placed in service it became apparent that Floorsteel and Numastik Bond were the solution to the problem. The grid left in an armored surface that took the full brunt of rolling loads. Exposed edges of the grid slightly mushroomed and exposed additional area of good-traction, wear-resistant steel surface. The resilient mastic was found resistant to both heavy loads and deteriorating effects of oils and heat. Monarch Rubber Company subsequently resurfaced all traffic lanes with this highly effective combination.

Results: Installation has now been in four years, and according to Mr. Patterson, Maintenance Engineer, Monarch Rubber Company is completely satisfied with the flooring protection and serviceability that Floorsteel and Numastik Bond have given. Lift trucks handle materials speedily and safely.

Illustration shows a heavily travelled, resurfaced traffic lane at a trimmed table in the curing room. Here, cured stocks are trimmed of flashing (about 3' square) before transferring to storage. Trimming is done on large, heavy steel plates (one is on the table top) which frequently fall to the

(Continued on next page)

TOWERS FOR TODAY AND TOMORROW



These towers are part of a modern, efficient, Pritchard-built chemical plant. They're in operation today . . . turning out the wonders of chemistry efficiently and economically. They will be producing more tomorrow . . . and for years of tomorrows . . . because they were built with all the design, engineering and construction skill of J. F. Pritchard and Co.

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When inquiring check CP 4262 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

(Continued from preceding page)

floor — corner down, more often than not. Even with this extreme abuse for 4 years, it can be seen that the floorsteel-Numastik Bond resurfacing has fared unusually well.

(Floorsteel is a product of the Klemp Metal Grating Corporation, Dept. CP, 1371 North Branch Street, Chicago 22, Illinois . . . or for more information check CP 4263 on handy Reader Service slip between pages 2 and 3.)

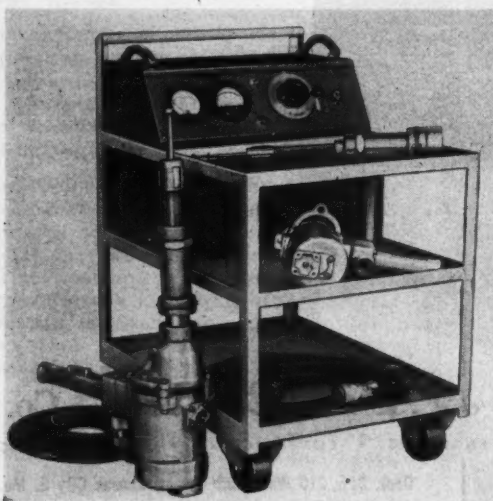
(Numastik Bond is a development of the Maintenance Engineering Company, Dept. CP, 16 West Johnson Street, Philadelphia 44, Pennsylvania . . . or for more information check CP 4263A on handy form, pages 2 and 3.)

Expands tubes in thick tube sheets or steam drums without step rolling

Uses: For expanding heat exchanger and boiler tubes in thick tube sheets or steam drums.

Features: Method eliminates step rolling in thick sheets, reduces tube rolling time by doing complete job in one operation. It is designed to expand tubes not only in thick sheets, but also in thin sheets. Method is said to prevent over expansion, protect sheet or drum against unnecessary enlargement of tube holes, and prevent compressive loading or bending of tubes.

Description: Fully automatic controlled retractive method of tube expansion draws metal of tube toward mouth and causes tube elongation to occur in that direction. Expander is inserted into tube and



Tube expansion method is fully automatic

far end of tube is expanded to desired tightness. Control then automatically stops expander motor, reverses it and retracts expander through tube. Expander automatically starts to retract when full



After heating, all Westinghouse Gear Blanks receive this quenching in an exclusive BPT solution. Gears so processed have a tapered hardness from surface to core—absorb the shocks of everyday service.



The hobbing process, long recognized as one of the most accurate of gear-cutting methods, is used on gears for all Westinghouse Speed Reducers. It assures true gear meshing and quiet operation of the finished speed reducers.

Do your speed reducers have the added value this precise manufacturing assures?

Are you getting toughness, stamina, long life? These are qualities of Westinghouse Speed Reducers which stem from the step-by-step precision that goes into their making.

Westinghouse Gear Blanks, for instance, are made from high-quality steel that's thoroughly checked for conformity to specifications. Gears are hob cut which means precision cut. They're heat-treated by an exclusive Westinghouse BPT process that carefully tapers gear hardness from surface to core. It's your assurance of gear teeth that will resist surface wear yet absorb the many shocks of service.

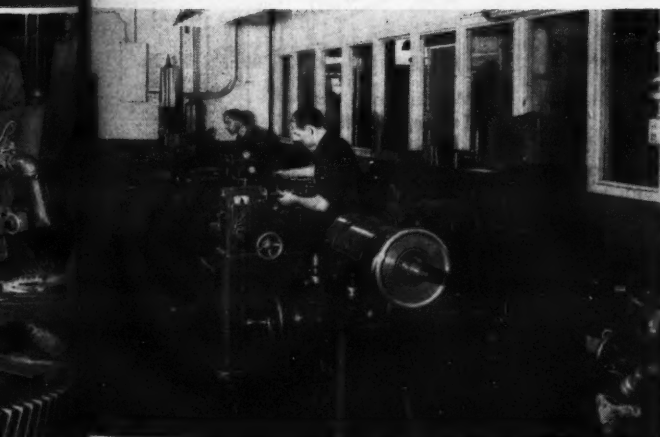
Antifriction bearings on all Westinghouse Speed Reducers lessen friction loads—especially on starting. They maintain precise gear center distance. The result—permanent alignment and minimum friction loss.

The rugged cast iron gear case is made in two sections for ready accessibility of all working parts. Thus servicing is greatly simplified. Ribbing, provided at points of greatest stress, gives extra strength and rigidity with proper alignment of parts maintained at all times.

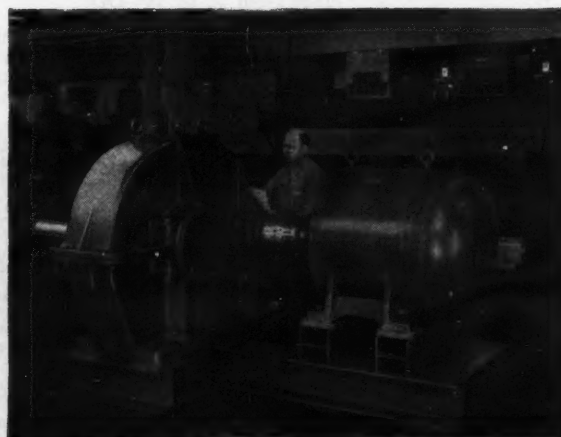
These features, together with many others that are designed, manufactured and tested to meet rigid Westinghouse standards, are the result of over sixty years' experience in the design and manufacture of gearing. This adds up to speed reducers that give year-in, year-out, trouble-free performance. Investigate the full line of Westinghouse Gearing Equipment wherever speed reduction is required. Your local Westinghouse representative will be glad to furnish any information. Call on him at any time or write, Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

J-07332

YOU CAN BE SURE...IF IT'S
Westinghouse



All machined parts are thoroughly inspected at each step of manufacture to assure the high degree of accuracy necessary for smooth operation. Hobs and other tools are also checked repeatedly to control uniformity of gears produced.



Before shipment, each complete speed reducer is given a running test under load. These tests enable Westinghouse to determine in advance the performance of each unit under conditions approximating actual service.

When inquiring check CP 4264 on handy form, pgs. 2-3

expansion is reached and keeps rolling as it retracts through tube, giving even expansion through full thickness of tube sheet.

The one control system will handle every size and type of tube ordinarily found in modern power, industrial, chemical and refinery use, according to manufacturer. System is available in two models with a choice of motors suitable for heat exchanger or boiler work.

(Development of The Airetool Mfg. Co., Dept. CP, 300 S. Center St., Springfield, Ohio . . . or for more information check CP 4265 on handy form, pages 2 and 3.)

S-shaped water curtain proves effective in dust collection

Hydrostatic precipitator that utilizes an S-shaped water curtain has proven highly effective in collecting most types of process dust. Recently im-

proved features are non-plugging water entrainment separators and heavier sludge ejector mechanism.



Arrows illustrate passage of air through collector

Unit is available in three basic arrangements which are identical in operating principle but differ in hopper design and means of sludge removal. The three arrangements provide manual cleanout, continuous drain, and sludge ejection by flight conveyors. Sectional construction permits

field conversion from one arrangement to another. Collector is made in capacities varying from 1000 to 48,000 cfm.

(Design 4, Type N Roto-Clone dust collector is product of American Air Filter Co., Inc., Dept. CP, Dust Control Div., Louisville 8, Ky. . . . or for more information check CP 4266 on handy form, pages 2 and 3.)

Pictures drafting machines

Complete mechanical description of various drafting machines including gravity compensated, track type, civil engineering and detail machines is presented in 20-page, 2-color booklet.

Booklet A-2000 is available from Charles Bruning Co., Dept. CP, 4700 Montrose Ave., Chicago 41, Ill. When inquiring specify CP 4267 on handy form, pages 2 and 3.

the most
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OLIVITE Acid-Handling PUMP



Corrosion and leakage!
Two important questions
when considering chemical-
handling pumps.

Here's how the Olivite answers them:

CORROSION... the cast-iron casing, cover and impeller are protected by a heavy covering of OLIVITE, firmly bonded to the metal. It will not pull away or slough off. OLIVITE—a special rubber base plastic impervious to most chemicals, hot or cold, strong or weak. For special chemicals we have OLIVEX—a strong high tensile plastic of which the impeller is made for certain applications.

LEAKAGE... We employ three elements to prevent leakage and protect the shaft:
1) Floating Stuffing Box which constantly adjusts itself to the shaft;
2) Spring-Loaded Gland enabling the operator to easily keep the packing under proper pressure; 3) Removable Shaft sleeve which protects the shaft against corrosion as well as wear.

Even assuming that all acid-handling pumps have equal pumping efficiency—which they don't—your choice will focus on the pump that provides maximum protection against corrosion and leakage. At least, these two thoughts were important in the minds of a number of companies now operating 100 or more Olivites. Would you like to have us tell you more about these big Olivite installations?

Our OLIVITE Bulletin No. 308-R

In sending for your copy of this bulletin,
tell us about your pumping problem.

Olivite Sizes 1½, 2 and 4 inch; Direct or V-belt drive.

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Johannesburg, Transvaal

When inquiring check CP 4268 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Bearing speeds over 100,000 rpm possible with use of precision plastic retainers...

laminates run more quietly with less vibration and provide self-lubricating characteristics

Uses: As bearing retainers for high speed applications in machine tools, grinding spindles, turbine and supercharger blowers, aircraft instruments, and similar units.

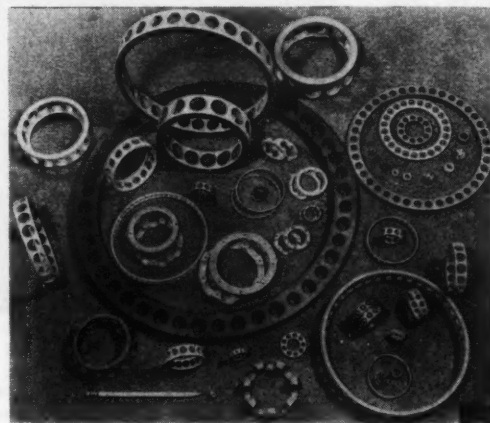
Features: Precision bearings capable of attaining speeds in excess of 100,000 rpm are possible through use of thermosetting laminated plastics. These easy-to-machine, light-in-weight materials are said to possess a unique combination of properties.

Comparative light weight of laminated plastics provides a number of advantages over metals. Due to the small mass involved, centrifugal forces resulting from extremely high speeds are reduced. As a consequence, there is less friction and wear against adjacent metal surfaces. Starting torques are lower and more consistent. Overall bearing weight is reduced, and galling, a temporary sticking or binding between two metal surfaces, is eliminated. This is particularly important where a fast, smooth acceleration is required.

Galling is usually attributed to insufficient lubrication or drainage of lubricant away from sliding surfaces. Laminates, while virtually impervious to oils and greases, do absorb small quantities of lubricant in the cotton fibers exposed during machining. This endows the bearing with self-lubricating characteristics. Tests are said to have shown that laminates run more quietly and with less vibration than steel at higher speed ranges.

Description: Retainers are fabricated in a variety of styles including the single row, deep groove; single row, low angle contact; single row, high angle contact; and double row, self-aligning. Retainers range from ¼ to 33" OD.

Laminated retainers may be fabricated from either tubing or sheet stock, depending on type of bearing involved. Tubing is generally used for one piece



Reduce overall bearing weight, permit lower starting torques, and eliminate galling

**"DEL" DESCO SAYS
DON'T LET THIS HAPPEN TO YOU!**



**If lubricants won't stay
in your plug valves...
YOU NEED**

DESCO Plug Valve LUBRICANTS

It is a fact that DESCO LUBRICANTS stand up where others fail. But before you buy — test them, convince yourself they are all we claim for them.

**ONLY 4 DESCO LUBRICANTS
HANDLE ALL VALVE SERVICES**

No. 600 All-Purpose Hydrocarbon
No. 750 High Temp. Hydrocarbon
No. 650 All LPG Services
No. 400 Acids and Caustics

CONVENIENT STICKS OR BULK



Packed in clean, convenient sticks to fit Delta Gun, or smaller sticks for jack screw lubrication, or in drums for volume lubricators.

DELTA GUN AND FITTINGS



With Delta High Pressure Gun and one-piece double-check fittings plug valve lubrication is 10 to 15 times faster.

**Write for Valve
Technical FILE**

Complete data on lubricant services, conversion charts, and application of Delta-Desco Plug Valve Lubrication Equipment.



DELTA ENGINEERING SALES CO.

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DESCO Plug Valve LUBRICANTS

When inquiring check CP 4269
on handy form, pgs. 2-3

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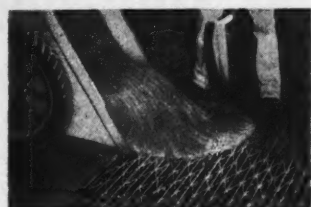
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There is an answer
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Flooring Problem with
IRVING GRATING!



For heavily abused areas:

CONTINUITY ARMOURING

The concrete filled grating floor will
not crack or break up. Low instal-
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For Fire Prevention and
minimum weight*

ALUMINUM GRATING

The spark proof quality of Alumi-
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Used for flooring or suspended
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"GRIDSTEEL" (For use in refracting units)

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When inquiring check CP 4270
on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

radial bearing retainers. Sheet stock is used for
thrust bearing retainers and for smaller two piece
retainers whose relatively thin walls might be cracked
by riveting operations. Drilling holes perpen-
dicular to laminations preserves maximum mechanical
strength of plastic.

Three major types of ball pockets are drilled by
company: 1) snap-in pocket; 2) Cherry-reamed
pocket; and 3) the straight-through pocket.

Snap-in pocket is designed so that ball must be
"snapped" or forced into pocket. Diameter of
pocket is largest where ball spins. Hole at surface
at which ball is inserted is large enough to permit
ball to pass through when forced, but too small to
permit ball to fall through accidentally. Hole on
inside diameter permits ball to protrude but not
pass through. Snap-in pockets can be used in either
radial or thrust-type retainers.

Cherry-reamed pockets consist of a straight hole
with a retaining shoulder at one end to prevent ball
from passing through. Once loaded, retainer must
be assembled to a bearing race to keep balls from
rolling out open end during handling. Cherry-
reamed pockets must be held to extremely close tol-
erances when designed for ball-riding retainers. In
land-riding retainers, Cherry-reaming tolerances are
not as critical.

Dimensions of retainers are held from + 0.005 to
+ 0.001", depending upon whether retainer will be
race-riding, ball-riding, and upon other considera-
tions of bearing design.

(Retainers are products of Synthane Corp., Dept.
CP, Oaks, Pa. . . . or check CP 4271 between pages
two and three.)

Approved increased hp ratings included in V-belt catalog

Sixty-page engineering catalog on industrial V-
belts and their applications includes the new
increased horsepower ratings approved by the
Rubber Manufacturers Association. It is a techni-
cal publication specifically prepared for design
engineers, maintenance engineers, and selected
purchasing personnel who will find it valuable
as a V-belt power transmission guide.

In addition to the new hp ratings for both stand-
ard and premium V-belts, catalog contains two
correction factors, namely, length correction and
small diameter factor for use in designing a V-belt
drive. A page each is devoted to standard sheave
sizes and standard groove dimension sheaves.

There are 16 pages and 23 tables devoted to
revised pre-engineered drive tables for quick cal-
culation. Three pages have been given over to
engineering information on general duty V-belts,
including hp ratings. Other sections cover open end
V-belt, link-type V-belt, and VV-belt.

Cat on industrial V-belts is available from Dept.
411, Durkee-Atwood Co., Dept. CP, 217 N.E.
7th St., Minneapolis 13, Minn. When inquiring
specify CP 4272 on handy form, pages 2 and 3.



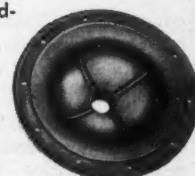
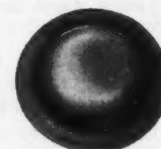
ODS Diaphragm SLURRY PUMP

Every Contact Inch
Highly Corrosion Resistant

ODS Pumps are available, of course, unlined for
handling non-corroding slurries or solutions but
when protection is necessary, all contact surfaces are lined
with rubber or neoprene.

So, if you have a pumping problem that calls for a dia-
phragm pump—regardless of the pH involved—get all the
facts about the O.D.S. It can handle just about any slurry
or solution found in industry. And it has one of the best
low-maintenance features to be found among all pumps:
a no-linkage, hole and slot-free diaphragm. Compressed
air or vacuum actuates the diaphragm.

Our Bulletin 309-R—recently issued—gives all the latest
details about the O.D.S. Pump. In writing for a copy, tell
us about your pumping problem. We have a line of acid-
handling centrifugal pumps, too—the Olivites.



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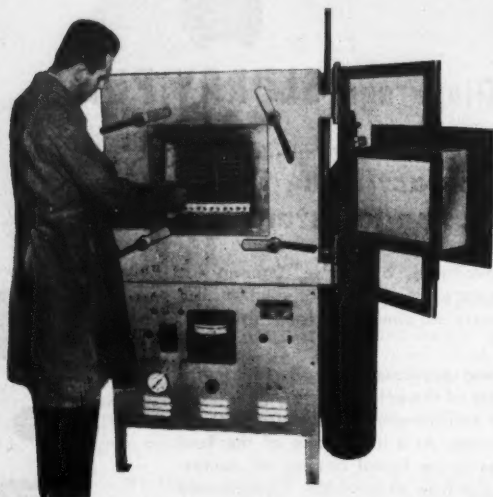
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Johannesburg, Transvaal

When inquiring check CP 4273 on handy form, pgs. 2-3

Where temps up to 2500°F and vacuums to 29" are required, electric furnace does job

This furnace has been designed for production and laboratory use where temperatures up to 2500°F and vacuums up to 29" are required; higher vacuum for special application can be supplied. Furnace and vacuum system can be used independently of one another if desired.

Furnace, called the "Airfre" model, is built in a large number of different sizes, and is complete with vacuum pump and other necessary control



Furnace and vacuum system can be used independently if desired

equipment such as gages, automatic pressure controller, variac, ammeter, timer, and automatic temperature controller completely wired and ready for operation.

(Product of K. H. Huppert Co., Dept. CP, 6830 S. Cottage Grove Ave., Chicago 37, Ill. . . . or for more information check CP 4274 on handy form, pages 2 and 3.)

Installation without penthouses and extra ductwork possible with roof exhauster

Uses: As a power roof exhauster for ventilation problems which demand high static pressures and large volumes of air.

Features: Units have all the economic advantages of a belt-driven, self-contained power exhauster, including installation without penthouses and extra ductwork.

Description: Unit will develop up to 4" static pressure and up to 65,000 cfm. This brings most industrial ventilation processes where high slot velocities are required well within range of this unit.

\$ 20.75
\$ 173.00
\$ 65.30
\$ 70.00

\$ 650.20
\$ 20.04
\$ 117.50
\$ 90.25
\$ 750.75

Cut cost and corrosion in the process

WITH ALCOA ALUMINUM FOR PROCESS EQUIPMENT

Alcoa Aluminum offers many advantages to the process industries—generally at lower original cost than other corrosion-resistant metals. For example, Alcoa Aluminum offers:

EXCELLENT LOW-TEMPERATURE PROPERTIES. Aluminum actually increases in strength and ductility as temperatures drop to -320° F and below. Alloy 3S-H14, for example, improves 67 per cent in tensile strength, 23 per cent in yield strength and more than 80 per cent in elongation.

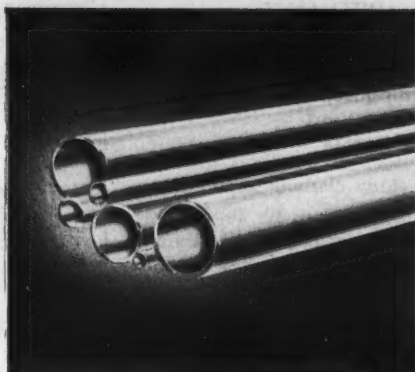
LOW COST. Aluminum continues to have a significant price advantage over most other metals. For example, Alcoa Heat Exchanger Tubes cost 1/3 less than mild steel, 1/2 less than Admiralty, 1/5 as much as stainless.

HIGH RESISTANCE TO CORROSION. Aluminum effectively withstands the corrosive effects of hydrogen sulphide and other sulphur compounds, most waters, carbon dioxide and many other organic and inorganic chemicals, food, drug and petroleum products.

GOOD WORKABILITY. Aluminum is easy to form, shape, machine and assemble with standard equipment. It can be joined by all the common methods of welding. Certain alloys can be brazed.

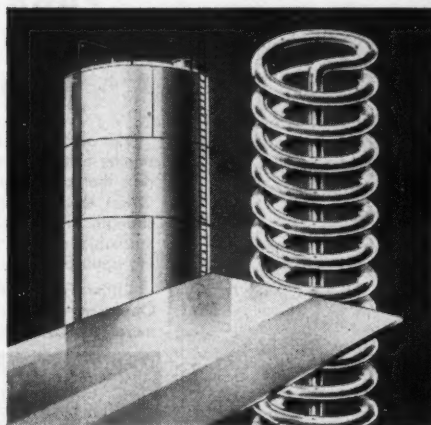
\$ 230.17
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\$ 40.00
\$ 12.70
\$ 181.00
\$ 62.21
\$ 25.16
\$ 200.00
\$ 465.23
\$ 28.53
\$ 137.45
\$ 65.20
\$ 20.63
\$ 547.80
\$ 360.40
\$ 15.03
\$ 25.00
\$ 100.25





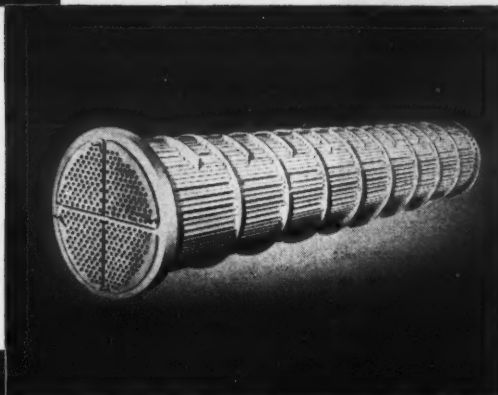
ALCOA ALUMINUM PIPE is the lowest cost corrosion-resistant metal pipe. It is not attacked by, nor does it contaminate or discolor, many chemicals. Does not cause sludge or gum in petroleum products. Friendly to most foods, beverages, oils. Alcoa Pipe is ideal for railings, scaffolds, storage racks and many other structural uses. Write for the booklet: "Alcoa Aluminum Pipe."

ALCOA ALUMINUM HEAT EXCHANGER TUBES offer big savings in original cost. For instance, an average-sized refinery can save \$50,000 in first cost (figured on 20,000 tubes) over other metal tubes. Further savings in handling, shipping, cleaning—as well as excellent low temperature service and resistance to corrosion—make Alcoa Tubes the best buy, by far, for heat exchanger service. Write for the booklet: "Alcoa Aluminum Heat Exchanger Tubes."

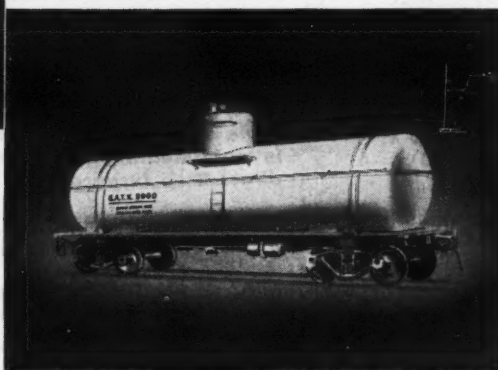


ALCOA ALUMINUM TANK CARS. Shippers everywhere report: No damage to loadings . . . no damage to cars, when valuable liquids are delivered in Alcoa Aluminum Tank Cars. Talk to your car builder, or write to Alcoa.

ALUMINUM COMPANY OF AMERICA
902-K Alcoa Building, Pittsburgh 19, Pa.



ALCOA ALUMINUM SHEET AND PLATE, Forgings, Coiled Tube, Tread Plate and Storage Tanks offer exceptional cost-cutting advantages to the processing field. Write for the pamphlet: "Alcoa Aluminum in the Process Industries."



For process chemicals
—catalysts, catalyst
carriers and desiccants
—investigate ALCOA
Chemicals.

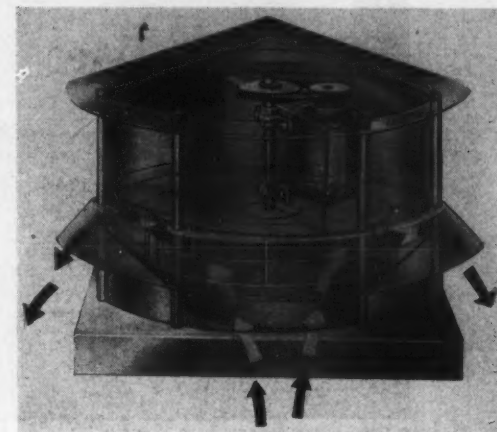
Alcoa
Aluminum

ALUMINUM COMPANY OF AMERICA

When inquiring check CP 4275 on handy form, pgs. 2-3

According to manufacturer, key to high performance is scroll effect developed for centrifugal power roof exhausters.

Unit has an air seal-off which develops a negative air pressure around motor shaft and prevents explosive or corrosive fumes from entering motor



Key to performance is scroll effect

housing. Other construction features are weather-proof, umbrella-type outlet and all welded, balanced backwardly curved centrifugal fan wheels.

(Product of The Gallaher Co., Dept. CP, 4108 Dodge St., Omaha, Nebr. . . or for more information check CP 4276 on handy form, pages 2 and 3.)

Service life of chain increased with 450 to 600% more metal on wearing tread of links

Uses: For bucket elevators and conveyors.

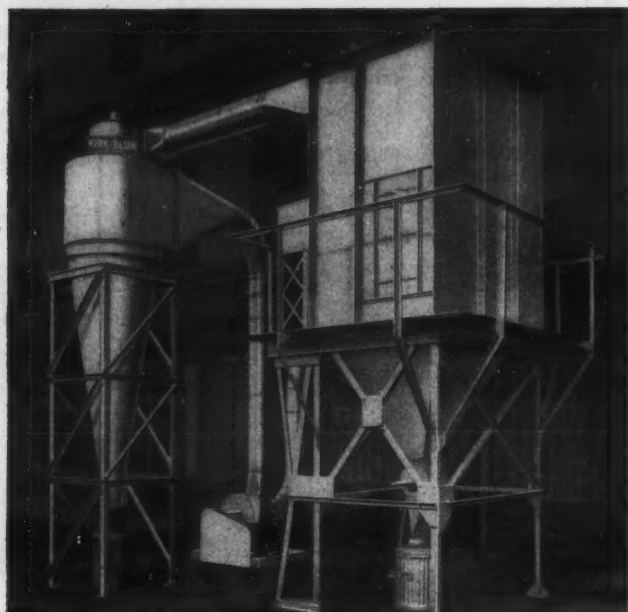
Features: Chain has from 450 to 600% more metal on wearing tread of each link. Added metal not only results in more efficient operation, but also increases service life of chain.

Description: Chain has block links cast of either malleable iron or Beauco-CR metal, depending on application. Side bars are of high carbon steel. Connecting pins of forged steel are used on malleable iron chain, and heat-treated steel pins are supplied with Beauco-CR chain.

(Combination chain is a product of Beaumont Birch Co., Dept. CP, 1505 Race St., Philadelphia 2, Pa. . . or check CP 4277 on form, pages 2 and 3.)

Using ethylene glycol to ease sodium sulfate crystallization problems. Solubility nomographs for this system appear on pages 206 and 208.

Two-stage air cleaning: high efficiency centrifugal collector (at left) plus cloth media filter.



pharmaceutical manufacturer finds **KIRK and BLUM DUST CONTROL** "just what the doctor ordered!"



To maintain rigidly controlled and conditioned plant atmosphere, air returned from cleaning operation is heated or cooled as required.

To insure, in all manufacturing steps, the purity of The Wm. S. Merrell Company's products, Kirk & Blum Dust Control Systems were installed by this well known pharmaceutical manufacturer. Dust is eliminated at its source to meet the plant's strict requirements. Since the building is air conditioned, cleaned air is tempered (warmed or cooled) before it is returned to the plant.

Whatever your problem, put it up to experts in air handling . . . KIRK & BLUM—with over 46 years' experience in Dust and Fume control. For illustrated literature, write to: The Kirk & Blum Mfg. Co., 3133 Forrer St., Cincinnati 9, Ohio.

KIRK and BLUM
DUST CONTROL

THE KIRK AND BLUM MANUFACTURING COMPANY
3133 FORRER STREET CINCINNATI 9, OHIO

When inquiring check CP 4278 on handy form, pgs. 2-3

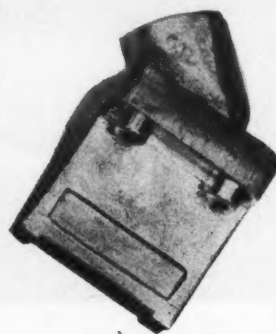
CONSTRUCTION & MAINTENANCE

Design of steam cleaning nozzle gives increased efficiency and reduces time and labor costs

Uses: As nozzle in steam cleaning applications.

Features: This nozzle is said to be 40% more efficient than conventional steam nozzle. Reduction of time and labor costs stems from increased efficiency which practically eliminates necessity for re-steaming object being cleaned. Flat nozzle has a patented center blade which gives user a hard-hitting impact with no divergence in spray.

Description: Steam-Blaster blade reduces effect of eddy turbulence at orifice of nozzle and creates a pressure differential between two flat planes of steam. This produces a knife-like cutting action at point where planes converge. Flow is completely non-divergent, assuring maximum impact and minimum waste of pressure.



Gives knife-like cutting action with no divergence

Ruggedly constructed, with a bronze body and stainless steel blade, the less-than-24-ounce nozzle can be used with detergents if desired. It can be used with a straight or 45° union, has a 1½ by .04" orifice and ½" pipe thread. Replacement parts are available.

(Steam-Blaster nozzle is a product of American Nozzle Corp., Dept. CP, 30 Church St., New York, N. Y. . . . or for more information check CP 4279 on handy form, pages 2 and 3.)

Scale and cold cores eliminated in metal heating by design of direct-fired furnace . . .

recuperative heating and hot atmosphere system increases production, tool and die life

Uses: For scale-free heating of tools and metal pieces to temperatures of 2400°F.

Features: This method of direct-fired heating makes it possible to obtain necessary soaking periods at required temperatures to assure complete equalization of temperature of work load. Problems of eccentricity, thin walls, and cold cores which account for high tool wear and breakage are eliminated, according to manufacturer.

Also, it is possible to idle furnace at control temperature for extended periods of time with a full load without resultant metal loss or scale formation.

Description: Heating furnace design is said to provide the ultimate in heating efficiency through complete utilization of heat potential in atmosphere



FEON

DUST COLLECTOR FABRICS for Hot or Corrosive Materials

Hot acid fumes up to 300°F, chlorine, and smelter exhausts are just a few of the materials that are handled by these new FEON Orlon fabrics. Long life, because of high strength and chemical resistance, gives remarkable savings in "tough" dust collecting application.

Other FEON fabrics are equally thrifty. One user reduced cloth costs over 50% . . . merely by switching to FEON Dynel.



FOR ANY TYPE OF EQUIPMENT

FEON weaves to handle any size or type of dust particles are available as yard goods, or fabricated into elements for any type of equipment. On any tough dust collecting or filtering job—switch to FEON and save.



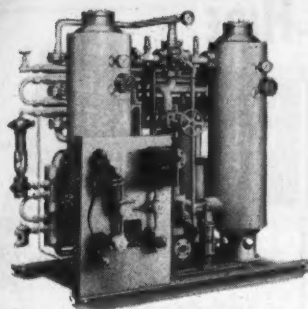
FILTRATION FABRICS DIVISION

FILTRATION ENGINEERS, INC.

155 Oraton St., Newark 4, N. J.

When inquiring check CP 4280 on handy form, pgs. 2-3

CHEMICAL PROCESSING



This is a Pritchard HYDRYER*—the choice of critical buyers in the petrochemical industry for efficient, dependable dehydration!

This quality packaged unit promises long, trouble-free operation in drying compressed air and other gases for instrument and process controls. Adsorbents are carefully selected for your drying requirements. Completely factory assembled.

Custom units designed for any special need. To cut dehydration costs, contact Pritchard today.

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ENGINEERS • CONSTRUCTORS
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COOLING TOWERS • SPECIALIZED HEAT EXCHANGERS
GAS AND AIR TREATING EQUIPMENT • CONSTRUCTION
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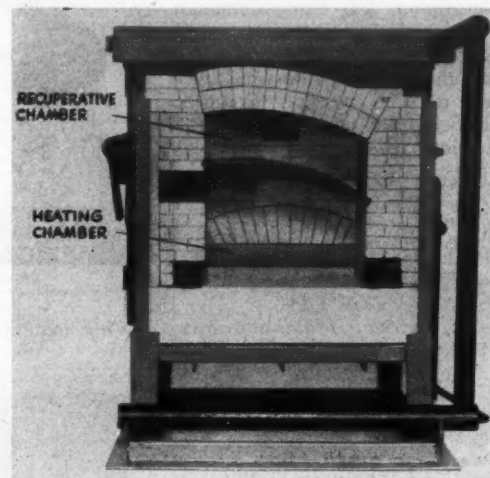
When inquiring check CP 4281
on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

gases. It is a patented method for recuperative burning of gases which allows for direct release of these primarily in a direct-fired unit, while simultaneously creating a furnace atmosphere with heating gases, it is possible to obtain extreme efficiency not only in radiant heating, but also in heating by conduction and convection.

When these hot gases are then burned to completion in recuperative section within furnace chamber, heat released to the work is virtually completed. This is most important from the standpoint of fuel savings.

Furnace equipment, designed specifically for heating applications which require scale-free heating, secondary protection, and additional lubrication, is available for all types of production operations. These prin-



Cut-away view shows design of direct-fired furnace

ciples of heating and protection are applicable in continuous pusher furnaces, rotary hearth furnaces, and batch-type furnaces to meet all specific heating requirements.

(Furnace design developed by The Lithium Co., Dept. CP, 111 Sylvan Ave., Newark 4, N. J. . . . or for more information check CP 4282 on handy form, pages 2 and 3.)

Guide to Industrial ventilation and air movement

Engineering, installation, and operating data for all special-duty and standard fan applications are reported in guide. Pertinent details for calculating duct sizes, friction losses, performance and horsepower requirements are included. Full details and descriptions of all company's fans and accessory equipment are given. (64 pages, illustrated)

Cat 20 is available from Aerovent Fan Co., Inc., Dept. CP, 720 E. Ash St., Piqua, Ohio. When inquiring specify CP 4283 on handy form, pages 2 and 3.



THERE'S MORE HERE THAN MEETS THE EYE...at U.S. Steel's Fairless Works

This is more than just the side wall of a pickling tank. The few pounds of material in this wall represent some *eighty car-loads* of ATLAS materials for corrosion-proof construction shipped to this one job site.

Hundreds of thousands of ATLAS Acid-proof brick . . . over a million pounds of ATLAS Corrosion-proof cements and jointing materials were used to help make the Fairless Works a sound long-term investment.

In your plant, too, where you are storing or handling corrosives of any type . . . ATLAS products will stand between your process and corrosion. In *tanks or processing vessels* . . . for plant floors . . . in the form of *pipe or fume ducts* . . . as a *coating* for plant structures: Wherever corrosion can take its toll, ATLAS products can provide effective protection.



ATLAS PRODUCTS STAND
... between your process and corrosion

INFORMATIVE LITERATURE
... available upon request
Vessel Linings Bulletin 4-2
Corrosion-proof Cements . Bulletin 5-2
Protective Coatings Bulletin 7-2
AMPCOFLEX® Rigid Polyvinyl
Chloride Fabrications . . . Bulletin 9-1

**ATLAS
MINERAL
PRODUCTS, CO.**

MERTZTOWN, PENNA.

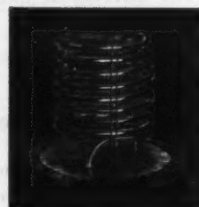
When inquiring check CP 4284 on handy form, pgs. 2-3

Nobody buys TANTALUM except for one reason: ECONOMY!

Tantalum is *immune* (not merely resistant) to any of the following: hydrochloric acid, bromine, iodine, hydrogen peroxide, nitric acid and perchloric acid. This immunity eliminates, at its source, the many headaches of corrosion—shutdowns, lost production time, repairs, replacements, product contamination or spoilage, fume damage, and a host of other *costly* corrosion results.

In hundreds of installations, tantalum has proven its economy over all other materials used or tested. Because tantalum is immune, light gauge construction is used, eliminating expensive framework and supports. Tantalum, being a metal, is an excellent heat conductor, saving steam or cooling water, permitting closer process controls. Experienced Fansteel engineers can tell you, quickly, whether or not tantalum could help lower your production costs.

Use Tantalum with economy for most acid solutions and corrosive gases or vapors except HF, alkalis, or substances containing free SO₃.



Ask for a copy of our free booklet
"Acid-Proof Tantalum Equipment for Chemical Operations"

FANSTEEL METALLURGICAL CORPORATION
NORTH CHICAGO, ILLINOIS, U.S.A.

32403C

When inquiring check CP 4285 on handy form, pgs. 2-3

CONSTRUCTION

Add a 355 alloy rod to Al welding line

Uses: For torch work in assembling, repairing and reclaiming sand castings of aluminum.

Features: Rod is intended for welding under such specifications as ASTM B26-50T. It meets government specification QQ-R-566 Type I Class FS-RAL-355, and applications already proved for it include welding P51, P6 and other aluminum castings of various tempers where analysis corresponds to type 355.

Description: Cast aluminum welding rod has a plastic range of 1025 to 1150°F. Its color matches, has the same corrosion-resistance and responds to heat treatment identically with standard type 355 aluminum alloys.

Rod comes in various diameters — 1/16, 3/32, 1/8, 3/16, 1/4" — and is 36" long.

(Product of All-State Welding Alloys Co., Inc., Dept. CP, 249-55 Ferris Ave., White Plains, N. Y. . . . or for more information check CP 4286 on pages 2 and 3.)

One piece construction of stem guide & body prevents valve leaks

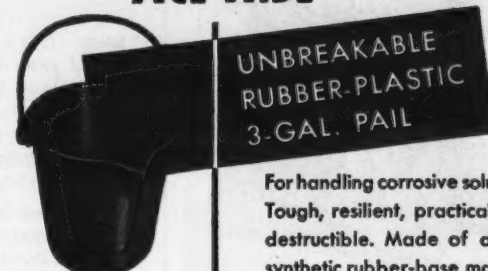
Uses: For accurate control over a wide range of service requirements in needle valve installations.

Features: Fusing of valve stem guide and valve body into an integral unit, rather than the usual threaded construction, provides a positive leak-proof joint and eliminates danger of valve stem guide coming loose while unscrewing the valve stem.

Description: All-steel construction needle valve is designed for working pressures up to 10,000 psi. Valve bodies and valve stem guides are machined from heavy bar stock steel. Deep chambered threads are machined to extra length, permitting even undersized pipe threads to make up tightly. Another advantage of deep chamber threads is that the possibility of restricted flow due to pipe ends coming too close to inlet and outlet ports is entirely eliminated.

Valve stems of 416 stainless steel with fine pitch threads permit a

ACE-HIDE



3-GAL. PAIL



1-QUART DIPPER

For handling corrosive solutions. Tough, resilient, practically indestructible. Made of a new synthetic rubber-base material called ACE-HIDE, unaffected by most acids and alkalis. Drip-proof spout pours easily directed stream. Graduated scale inside pail. ORDER NOW from your rubber goods distributor, or write us.

ACE rubber and plastic products

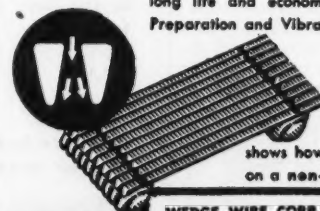
AMERICAN HARD RUBBER COMPANY

93 Worth St., New York 13, N. Y.

When inquiring check CP 4287 on handy form, pgs. 2-3

Kleenslot WEDGE-WIRE PREPARATION SCREENS FOR DEWATERING, SIZING AND SCREENING OPERATIONS

The chemical, food and general industries can't afford to overlook this product. Accurate openings, great strength, long life and economy makes WEDGE-WIRE Preparation and Vibrator Screens and Screen-Guards "front line" products.



Cross section at left shows how KLEENSLOT Screens operate on a non-clogging principle.

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DON'T
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WEDGE WIRE CORP.
5610 Clark Ave., Cleveland 2, Ohio

Gentlemen:
Please send us literature outlining the superiority of Wedge Wire construction.

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5610 CLARK AVE. CLEVELAND 2, OHIO

When inquiring check CP 4288 on handy form, pgs. 2-3

CHEMICAL PROCESSING

FOR YOUR Processing Operation

TANKS
FILTER PRESSES
DISC FILTER
FILLERS
FILTER MEDIA

We can supply all or any part of your filtering, mixing, storing and filling equipment.

- MIXING AND STORAGE TANKS
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We invite your inquiries.

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The FILTER PAPER CO.
2432 S. Michigan Ave., Chicago 16, Ill.

When inquiring check CP 4289 on handy form, pgs. 2-3

Here's the Solution to CONTAMINATION PROBLEMS

BLAW-KNOX Tight-Lip BUCKETS

● NOW you can handle granular fines without danger of contamination! Blaw-Knox Chemical and Fertilizer Buckets are equipped with tight fitting cast chrome-nickel-molybdenum alloy steel lips to stop leakage and resist abrasion. For a detailed description on all the important features, write for Bulletin 2236.

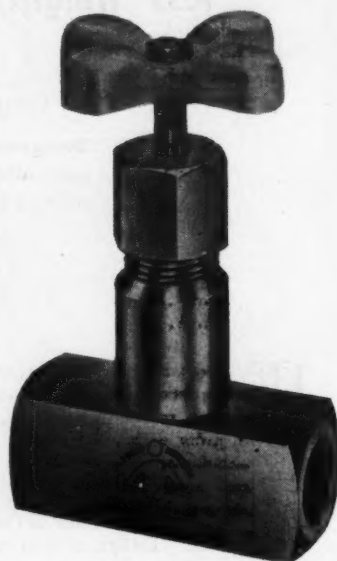
BLAW-KNOX COMPANY
Blaw-Knox Equipment Division
2076 Farmers Bank Bldg., Pittsburgh 22, Pa.
Offices in Principal Cities

BLAW-KNOX CLAMHELL BUCKETS
FOR CHEMICAL AND FERTILIZER PLANTS

When inquiring check CP 4290 on handy form, pgs. 2-3

CONSTRUCTION

close throttling and retain strength necessary to withstand pressures of twice the normal working pressure. Packing used is of a durable quality, tailor-made to fit the deep packing space provided. Clean and easy to remove and install, this one-piece molded packing produces a leak-tight seal around valve stem without binding, permitting easy operation of valve at all times.



Needle valve designed for working pressures up to 10,000 psi

Valve body, packing gland, and packing nut are electro zinc plated to prevent corrosion. Valve is furnished with a rugged, cross-type handle of malleable iron finished in heavy baked enamel.

(Product of Marsh Instrument Co., affiliate of Jas. P. Marsh Corp., Dept. CP, Skokie, Ill. . . . or for more information check CP 4291 on handy form, pages 2 and 3.)

High pressure equipment cataloged in 10 pages

Covering the range of high pressure equipment from adapters and couplings to tubing and valves, this 10-page catalog includes sectional line drawings of each item described.

Cat 1053 is issued by High Pressure Equipment Co., Dept. CP, Erie, Pa. When inquiring specify CP 4292 on handy form, pages 2 and 3.

QUALITY PELLETS

WITH LARGER TONNAGE
PER EXTRUSION UNIT!

CAPACITIES TO

*1 1/2 Million
Pellets
Every 60
Seconds!*

The Welding Engineers Auxiliary Worm Extruder is designed especially to handle hard-to-process materials . . . operating on a unique principle adapted to the special characteristics of any extrudable feed:

CLAYS CATALYSTS FILTER CAKES
DRUGS DIATOMACEOUS EARTH METAL ORES
CAULKING COMPOUNDS RUBBER ACCELERATORS
CARBON BLACK MIXES POLYISOBUTYLENE

A wide selection of worms of varying design are available to give the correct type of working to your material while producing uniform pellets at high output rates. For efficiency, for low-cost production, for improved quality . . . it's time to get acquainted with

WELDING ENGINEERS

Auxiliary Worm Extruders

There is a wide range of sizes in Welding Engineers' line of Auxiliary Worm Extruders from laboratory models producing 125,000 pellets per minute to the largest model capable of extruding 1,500,000 pellets of 3/16" diameter every minute.



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COMPLETE FOLDER

with descriptive data,
illustrations of models
and the complete story
of the Welding Engineers
Auxiliary Worm Extruder

WELDING ENGINEERS, INC.
NORRISTOWN, PENNSYLVANIA

When inquiring check CP 4293 on handy form, pgs. 2-3

SOLVE YOUR MIXING PROBLEMS



A tremendous variety of fluid mixing needs are ably handled by the complete line of Eastern Mixers. Size and power of mixers are flexible to help solve your problems. For complete information and engineering data, write for Eastern Fluid Mixing Catalogs. Eastern engineers are always available to work out your complex mixing problems with you.



Eastern INDUSTRIES, INC.
Dept. D, Regent St., Norwalk, Conn.

When inquiring check CP 4294 on handy form, pgs. 2-3

One piece body-and-head design of proportioning pump means less weight, smaller size

Designed for pressures to 300 psi and controlled volume pumping capacities up to 12 gph

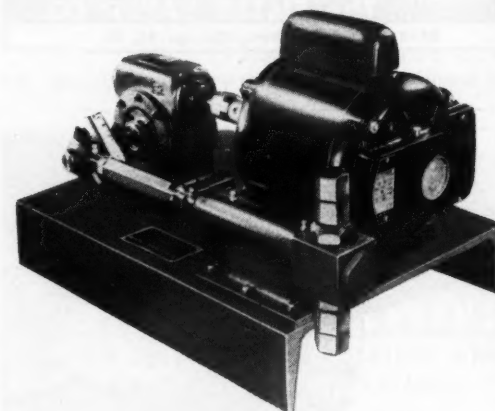
USES: For boiler feed water treatment and numerous other controlled volume chemical pumping applications.

Features: Major item contributing to the reduction of weight and size of pump is number of castings required. Design of unit necessitates only one casting, a combined pump body and head. Base consists of 12-inch structural channel iron, having relatively smooth and flat surfaces overall, cut off to proper length. Thus, design has eliminated machining of a separate pump head, flanges, bolts, bolt holes, pilots, and smooth surfaces on base. Weight of unit has been reduced from a former 102 lb to 62 lb.

Description: Model 100 pump is designed for pressures to 300 psi and controlled volume pumping capacities up to 12 gph. Models are assembled as single or double pumping units (simplex and duplex models) on the same base. Maximum pumping capacity of individual units can be varied at factory by assembling pump with different diameter plungers.

Design eliminates packing nut adjustment, and features a spring loaded packing arrangement which automatically keeps chevron-type packing under correct pressure. Packing can be replaced without moving pump, motor, gear box, or base, and without moving or disconnecting any piping.

Standard components of unit include double ball check valves on both suction and exhaust lines, adjustable eccentric with calibrated scale to vary or adjust capacity, air-



Pump requires only one casting

craft-type uniball bearings used as universal joints at both ends of connecting rod, separate standard gear reducer unit, and separate motor unit.

(Product of Neptune Pump Mfg. Co., Dept. CP, 4912 N. 6th St., Philadelphia 20, Pa. . . or for more information check CP 4295 on handy form, pages 2 and 3.)

Emulsifies large quantities of mineral oils, greases, keeps them in suspension

Uses: In the vitreous enamel industry, material is particularly recommended for work requiring removal of non-pigmented drawing and stamping compounds, mineral and vegetable oil and grease, and

quenching oils from ferrous parts prior to enameling operation.

Features: According to manufacturer, this cleaner has exceptional ability to emulsify large quantities of mineral oils and greases and keep them in a state of suspension.

Description: Metal cleaner is described as a medium-high alkaline compound containing very high wetting and penetrating properties. It is said to meet the following six requirements.

1. Cleans work with no traces of soil to reduce effectiveness of enamel finish.
2. Provides maximum long life for economy and uniformity.
3. Creates little or no sludge to keep costs and maintenance time low.
4. Has high emulsification power.
5. Affords low surface tension for thorough rinsing power.
6. Has top cleaning efficiency even under hard water conditions.

Operating test reports on the cleaner state that in an aqueous solution of from six to eight ounces per gallon it may be boiled continuously without any depreciable effect on concentration of compound in solution.

(Detrex 63 is a product of Detrex Corp., Dept. CP, Box 501, Detroit 32, Mich. . . or for more information check CP 4296 on handy form located between pages 2 and 3.)

Factories and offices cooled 6 to 26°F by roof treatment which reflects radiant heat

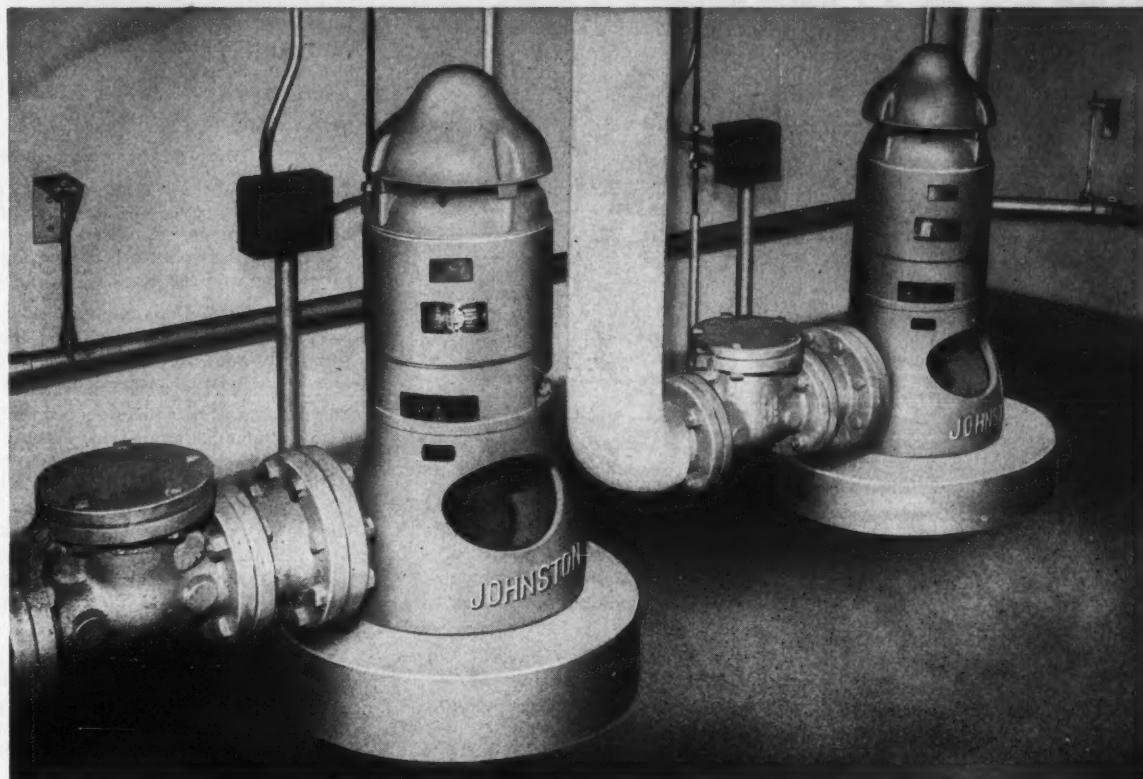
Living and working conditions in factories and offices can be greatly improved in hot summer weather by treating roofs with this material, according to manufacturer. It bonds a seamless aluminum blanket to roof, which reflects up to 75% of the sun's radiant heat. Unlike conventional aluminum paints which quickly stain and discolor on bituminous surfaces, product is said to remain bright and heat-resistant for years.

Tests by the company reveal that with a summer day temperature of 96°F, below-roof temperatures in a plant reached 116°F. The same day, roof coolerant was applied to the roof. Result was an immediate drop of up to 26°F in work areas. Tested on "insulated" roofs, material lowered below-roof temperatures as much as 6 to 15°F. By relieving the load on air conditioning equipment, use of material is reported to have saved up to 25% on cooling costs.

Besides reducing below-roof temperatures, material is said to prevent roof from drying out and becoming brittle and cracked due to excessive heat. This protection increases roof life and cuts maintenance.

(Roof coolerant is a product of The Tropical Paint & Oil Co., Dept. CP, 1210-52 W. 70th St., Cleveland, Ohio . . . or check CP 4297 on form between pages 2 and 3.)

In All Kinds of Industrial Pumping Applications



JOHNSTON PUMPS ARE DOING A BETTER JOB...

Take this hot well installation, for example. Two Johnston Unit-Line, 3 horsepower, close-coupled pumps delivering 120 gallons per minute against a 65 foot head, were selected for this job, because . . .

1. NO PACKING GLAND MAINTENANCE

An extra long throttle bearing and by-pass in the discharge case make a packing gland or mechanical seal unnecessary.

2. NO BEARINGS TO LUBRICATE BELOW BASE LEVEL

Vertical, hydraulically balanced design elimi-

nates radial thrust and consequent bearing and impeller wear.

3. NO PRIMING NECESSARY

The open suction is submerged, thereby doing away with expensive priming devices used on other type pumps.

Just three of many reasons why Johnston equipment is handling all types of pumping jobs BETTER, in large or small operations. Why not let our trained engineering staff consult with you on the best solution to YOUR particular problem?



Send today for your free copy of our new bulletin about JOHNSTON UNIT-LINE Pumps. Ask for Bulletin D-103.



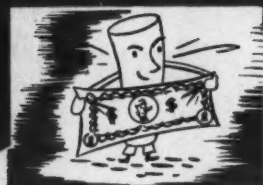
JOHNSTON PUMP COMPANY

3272 EAST FOOTHILL BLVD., PASADENA 19, CALIFORNIA

When inquiring check CP 4298 on handy form, pgs. 2-3

IF YOU USE "TEFLON"...

ETHYLENE



PRICE—Specializing in Teflon has produced operating economies permitting Ethylene to pioneer in lower prices.



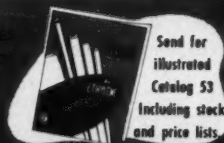
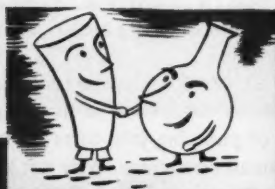
DELIVERY—Ethylene keeps a large stock of most items, others are usually available in a week or two.

QUALITY—Up to date on instrumentation and process control insures maximum quality.

VARIETY—Ethylene stocks dimensions close to your finished size—saving material.

ACCURACY—Close tolerances are available as standard practice in large or small quantities.

DEVELOPMENT—Ethylene offers engineering experience to help solve your problems.



Send for illustrated Catalog 53 including stock and price lists



ETHYLENE CHEMICAL CORPORATION

245 Broad St. • Summit, New Jersey

When inquiring check CP 4299 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Firing follows load demand in automatic water-tube steam generator . . .

develops maximum efficiencies with minimum supervision; fired with oil, gas, or coal

Uses: As a steam generating unit.

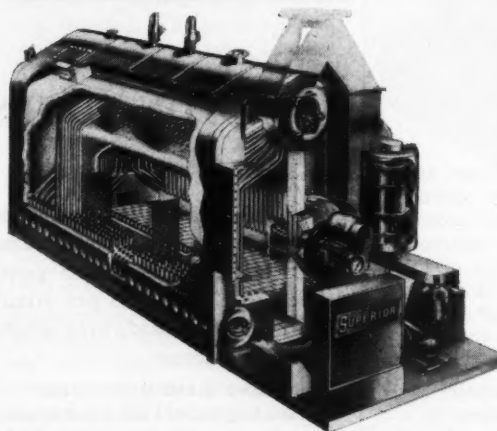
Features: Designed to provide fully automatic firing with oil, gas, or stoker coal, steam generators develop maximum efficiencies with minimum supervision. Firing follows load demand; always ready to meet demand for steam, according to manufacturer.

Description: Designed as a unit, generators are completely factory-assembled and test-fired prior to shipment, both for efficiency and capacity. Each unit is in itself a complete steam generating plant.

Shipped complete, generators are ready for operation with minimum installation expense. Built on a structural steel base, they require no brick setting, no pitting, no special foundation . . . other than a floor capable of holding their weight. Units can be furnished for permanent outdoor installation.

Units are built in 9 sizes with capacities ranging from 5300 to 33,000 lb of steam per hr, and for pressures to 400 psi. Units for higher pressures are supplied on special order.

The "A" type construction promotes quick steaming, while tube layout protects steam drum from direct impingement. Large steam drum provides ample steam releasing surface; and internal steam separator assures dry steam delivery. All water wall tubes are

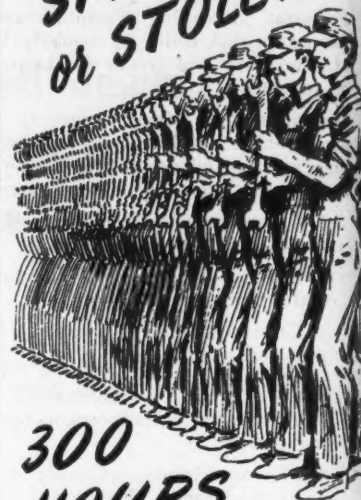


View of steam generator showing "A" type design

fed uniformly through the adequate lower drums, which are of uniform diameter throughout their entire length, eliminating undesirable restrictions. Ample hydrostatic head assures rapid circulation and immediate response to fluctuating load demands. Unobstructed floor of firebox makes design readily adaptable to stoker installation.

Specially designed multiple fan induced draft system is said to provide cleaner, quieter operation; insures positive purging of combustion chamber before and after firing. Dual induced draft fans, and divided second pass provide extreme flexibility of firing

LOST!
STRAYED!
or STOLEN!



300
HOURS
OF PROFITABLE
PROCESSING TIME

It is sad but true that in most processing plants inferior ordinary packing materials cause hundreds of costly shutdowns each year.

How can you prove this fact?

Take one machine. Replace ordinary gaskets, packings for Chemical & Power Products TEFLON gaskets, and packings we'll guarantee they will outlast the conventional type up to 100 to 1.

Send for Catalog and price list today. If you have an immediate problem, let our Engineering Department help you solve it.



When inquiring check CP 4300 on handy form, pgs. 2-3

CHEMICAL PROCESSING

range. Shutting down either of fans permits efficient operation at lower firing rates than are generally considered practical.

(Product of Superior Combustion Industries, Inc., Dept. CP, Room 305, 1475 Broadway, New York, N. Y. . . . or for more information check CP 4301 on handy form, pages 2 and 3.)

Faster, easier installation of device for transferring power from busway to machines below

Uses: For transferring power from overhead busway to machines below, device, called FG Flex-A-Plug, is designed for use with company's Flex-A-Power Distribution system.

Features: Installation is made easier and faster, according to manufacturer, by hanger clips which hold plug in position while screws are tightened to anchor it firmly to distribution system housing. Tests are reported to have shown that only 1/4 the time is needed for installation than formerly.

Description: Unit works on same principle as plugging into a wall socket. Electrically, the interior operates on the circuit breaker principle of arc



Hanger clips hold device in position while screws are tightened to anchor it firmly to housing

interruption. Use of grid pins, magnetic repulsion, and other circuit breaker principles to interrupt arcs gives this interior a high momentary current rating, the ability to resist heavy current surges without damage.

Mechanically, plug is designed with heavy gage steel side shields which protect its stabs, the copper prongs which provide contact with bus bars. Stabs are further protected by a rugged phenolic shield which encases them. This phenolic shield also provides electrical insulation. Plugs are available in 30, 60, 100, and 200 ampere ratings.

(Product of Trumbull Electric Dept., General Electric Co., Dept. CP, Plainville, Conn. . . . or check CP 4302 on handy form, pages 2 and 3.)



SMOKE BLOWN THROUGH a Norton ALUNDUM* seamless tube escapes throughout the tube's entire area. Such a tube gives most efficient filtration and ease of cleaning by back washing. When selecting tubes for your specific application be sure they embody this important feature.

*Trade-Mark Reg. U. S. Pat. Off. and Foreign Countries



POROUS MEDIUMS

Making better products to make other products better

NORTON COMPANY, WORCESTER 6, MASSACHUSETTS

Why Norton seamless tubes give you better filtration

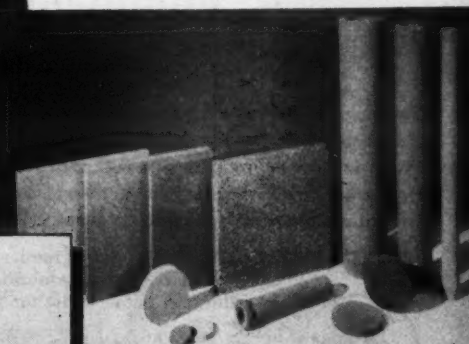
Only Norton ALUNDUM tubes have the seamless construction that means more uniform filtration and enables faster, more thorough cleaning. And like all Norton porous mediums they're made with the patented *controlled structure* process that assures even distribution of pores — in the size and open-pore ratio that best meets your needs.

Cost-cutters over a wide job range

In any form, Norton porous mediums have exceptional resistance to breakage, chipping and acid and alkaline conditions. They're designed to perform better, last longer and cut your operating costs in a wide variety of chemical field applications. For example: filtering water or solvents . . . cutting oils, wine and other liquids . . . reclaiming cleaning fluids and industrial waste . . . in boiler feed water treatment.

Get the whole story

See your Norton Representative for complete facts on how you can get more savings and satisfaction with Norton porous mediums. Or write describing your requirements, to NORTON COMPANY, 369 New Bond St., Worcester 6, Mass. Canadian Representative: A. P. Green Fire Brick Co., Ltd., Toronto, Ontario.



NORTON ALUNDUM POROUS MEDIUMS are available as tubes, plates and discs in a wide range of sizes.

When inquiring check CP 4303 on handy form, pgs. 2-3

these **LITTLE DIFFERENCES** mean

BIG ADVANTAGES
when you specify

CAMBRIDGE INDUSTRIAL WIRE CLOTH



#1. Some manufacturers assign only one operator to as many as ten looms. But here at Cambridge, we have a specially trained operator for every single loom in the plant. Just a little difference . . . but a **BIG** advantage in accurate mesh count and constant screen width.



#2. Some wire cloth producers can work in only a certain few metals or in a limited range of mesh sizes. Here at Cambridge we can weave cloth from any metal that can be drawn into wire . . . our range of sizes runs from 20 x 250 mesh up to 4 inch openings . . . a **BIG** advantage for customers with varied needs.



#3. Some manufacturers are not equipped to fabricate wire cloth into special forms, for example, filter leaves. But here at Cambridge, we can supply wire cloth in bulk or in practically any type of fabricated part . . . a **BIG** advantage that saves you time and money by providing one source for both weaving and fabrication.

These are just a few reasons why it will pay you to investigate Cambridge for your wire cloth needs. Call in your Cambridge Field Engineer to get the full story . . . and he'll gladly quote on your next order. Write direct or look under "Wire Cloth" in your classified telephone book.

FREE CATALOG! Gives full range of mesh sizes and types of cloth available from Cambridge, also valuable metallurgical data. Write for your copy today.



The Cambridge Wire Cloth Co.

Department F
Cambridge 10,
Maryland



WIRE
CLOTH

METAL
CONVEYOR
BELTS

SPECIAL
METAL
FABRICATIONS

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

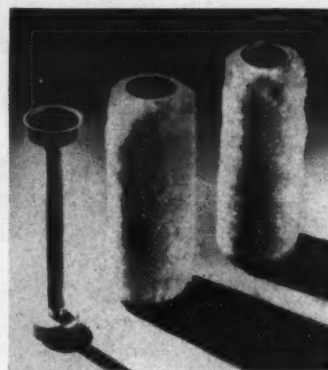
When inquiring check CP 4304 on handy form, pgs. 2-3

CONSTRUCTION

**Safer, more economical
paint jobs possible
using roller . . .**

long handle eliminates much
unproductive time

Industrial paint jobs are said to be made safer and more economical by the use of heavy-duty paint rollers fitted with long handles. Roller consists of extra high pile lambs'



Holds more paint than conventional roller and may be used on all types of surfaces

wool attached to a strong core of paper impregnated with phenolic resins which make it resistant to solvents, paints, and thinners.

Rollers are designed for rapid painting of walls, ceilings, floors, structural steel, and other large areas in heavy industry. Paint can be rolled on most surfaces from a standing position on a floor or dock, as the industrial roller is easily fastened to an extra-long pole. This reduces the need for ladders and scaffolds, thus eliminating much unproductive time for moving and adjustment, inherent hazards, and interference with other work.

More surface can be covered in less time with the larger diameter roller which comes in 9, 14, or 18" widths and holds more paint than a conventional roller or brush. Roller rides on brass bearings in an aluminum frame which will not rust. Special lock makes rollers quickly and easily interchangeable. Oil, water, or rubber-base paints can be rolled on all types of surfaces, including metal, wood, plaster, cement, stucco, plastic, and composition board.

(Roller is based on a paper core impregnated with phenolic resins,

JABSCO SELF-PRIMING PUMP AND CLUTCH UNITS

**Built-on Clutch
Fingertip Controlled**



Jabasco's multi-purpose Pump and Clutch Units are available for immediate delivery. Model 2300 (1" pipe size), and Model 2500 (1 1/4" pipe size) are small, compact units having the easy-operating clutch built into the pump, eliminating the need for a separate clutch base. Friction cone type clutch can be operated by handle, lever or cable. Units are equipped with New Departure sealed and pre-lubricated ball bearings in both pump and clutch. These compact units may be mounted at any angle desired, and driven by an A or B Section V-belt. Jabasco Pumps are completely self-priming, with dry suction lifts approaching 20'; when primed, as high as 25', and no foot valve is required. The exclusive Jabasco "camflexed" Neoprene Impeller is the only moving part in the pumps. Impeller is easily replaced without disconnecting piping or drive belt. Jabascos are economical, low in first cost, and trouble and maintenance free, even under continuous rugged operation. Liquids are efficiently pumped at low or high speed, in either direction. Model 2300 delivers 1680 GPH and Model 2500 delivers 3300 GPH at 10' head, 1750 RPM. For complete information, write **Jabasco Pump Company**, 2031 North Lincoln Street, Burbank, California.

When inquiring check CP 4305 on handy form, pgs. 2-3

STOP CORROSION with HARPER

EVERLASTING FASTENINGS

BY THE DOZENS OR BY THE MILLIONS

If you use fastenings of brass, bronze, copper, Monel, aluminum or any stainless steel, you can get what you want from Harper. Over 7,000 items stocked—all backed by Harper's advanced metallurgists and skilled engineers. See your Harper Distributor.



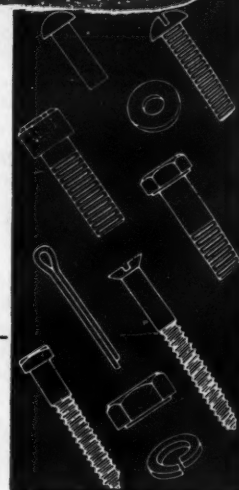
EVERLASTING FASTENINGS

The H. M. Harper Company
8241 Lehigh Avenue
Morton Grove, Illinois
Please send me Harper Catalog.

Name.....

Address.....

City.....State.....



When inquiring check CP 4306 on handy form, pgs. 2-3

CHEMICAL PROCESSING

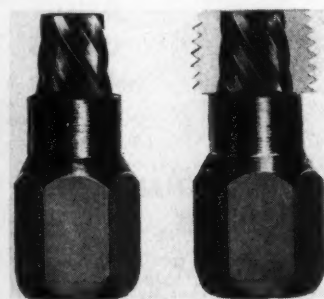
products of Bakelite Co., Div. of Union Carbide & Carbon Corp., Dept. CP, 260 Madison Ave., New York 16, N. Y. Industrial paint roller is a product of The American Products Co., Dept. CP, 3308 Edson Ave., New York 69, N. Y. ... or for more information reader may simply check CP 4307 on handy Reader Service slip between pages 2 and 3.)

Easily removes broken threaded parts

Uses: Extracting tool removes broken threaded parts without wedging them into place.

Features: Tool is designed to form teeth inside hole until shoulder contacts part and permits a high torque without expanding the part.

Description: Extractor is made to work with any fitting in the pipe, hydraulic, aircraft, plumb-



Permits high torque without expanding part

ing, or mechanical fields and is available in a range of 20 sizes.

Manufactured of fine steel and carefully heat-treated, extractors are said to be strong and easy to use. Large hexagon head of tool can be gripped and turned with any wrench.

(Product of Roddick Tool Co., Dept. CP, 1023 N. Pauline St., Anaheim, Calif. ... or for more information reader may simply check CP 4308 on handy form, pages 2 and 3.)

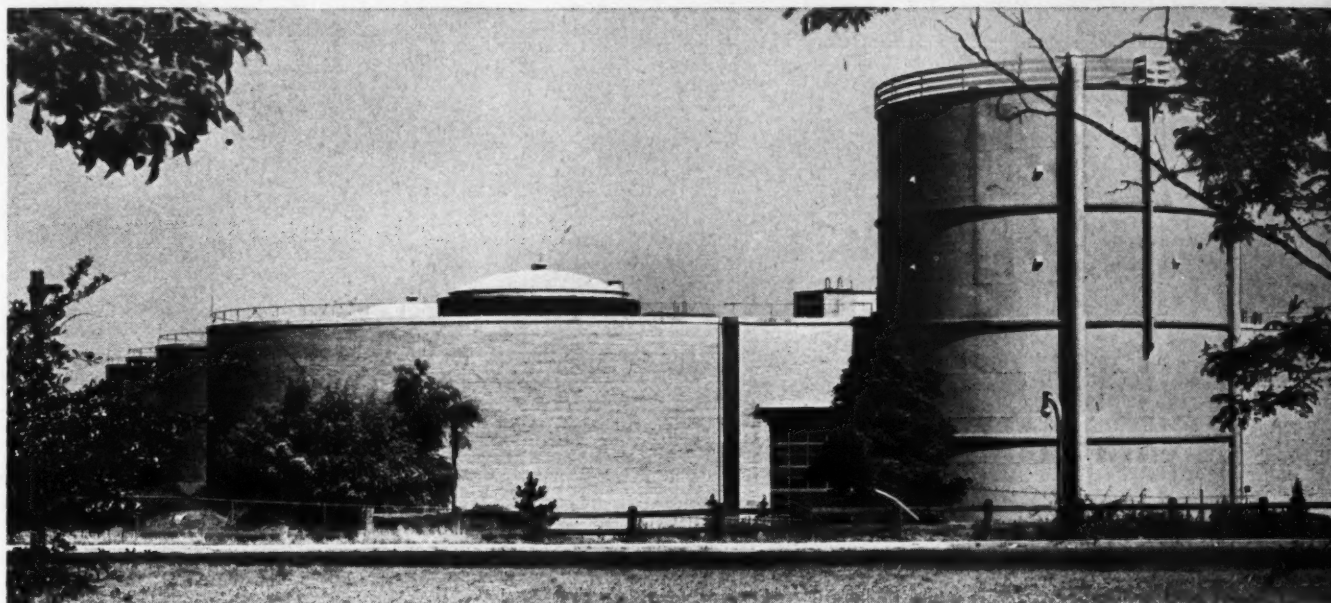
For more information on product at right, specify CP 4309 ... see information request blank between pages 2-3.



no. **2** of a series

GUIDES TO GASHOLDER PLANNING

"'Sore thumb' gas works hurt community relations . . .



How about a good-looking gasholder?"

Residents of an eastern city were aroused when word spread that a sewage digester gasholder was being planned in their neighborhood. They visualized a "sore thumb" superstructure with rigging looming high overhead, thought of property values skidding because they'd have an ugly, old-fashioned gas works as a new neighbor. Their protests posed a serious problem in community relations for the company.

The installation of a handsome, compact Wiggins Gasholder solved the problem to everybody's satisfaction. The only truly modern gasholder, the Wiggins gasholder is not only safe, efficient and economical but—due to its simplicity—it's also *good-looking*. Dry fabric seal and self-aligning piston eliminate unsightly exterior mechanisms required for other types of gasholders. For complete facts, write General American.

Wiggins Gasholder



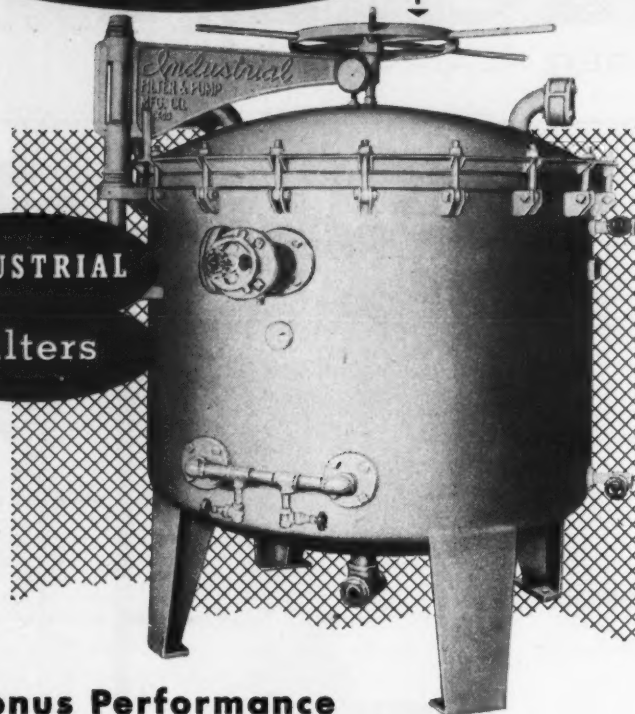
GENERAL AMERICAN TRANSPORTATION CORPORATION

135 South La Salle Street • Chicago 90, Illinois • Offices in Principal Cities

FILTRATION

ANY SOLUTION
ANY QUANTITY

INDUSTRIAL
Filters



Bonus Performance with Lasting Reliability

The engineering and construction features of INDUSTRIAL filters add up to maximum clear filtrate with less floor space, greater operating conveniences, and less maintenance delays and expense. The general design permits the use of the materials best suited to the solution requirements. Vertical filter leaves with ample flow space on both sides offer maximum filtration area. Outside lockup simplifies the installation of filter leaf and bag assemblies. An exclusive air-wash cleaning method practically eliminates the usual labor and inconvenience of dismantling the filter after every cycle. INDUSTRIAL filters are often in operation for months without removing the cover — cutting downtime to a minimum. All these features have been proved in long-life service — your assurance of dependable bonus performance.

Full particulars and recommendations on any filtration job will be given upon request.

INDUSTRIAL

FILTER & PUMP MFG. CO.

5908 Ogden Avenue, Chicago 50, Illinois

PRESSURE FILTERS
DEMINERALIZERS
RUBBER LININGS

When inquiring check CP 4310 on handy form, pgs. 2-3

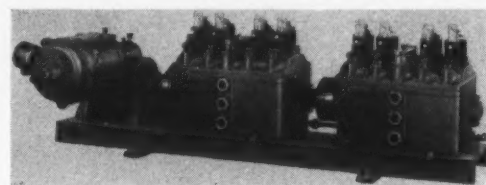
CONSTRUCTION & MAINTENANCE

Two models of high pressure
lubricators serviceable for
20,000 — 30,000 psig

Uses: For cylinder and bearing lubrication of compressors, these lubricators are suitable for many other high pressure applications.

Features: Two models are offered. Model HP20 has a pump assembly with 5/16" diameter plunger and will pump 6 1/2 drops of SAE 40 oil per stroke against 20,000 psig. The HP30 with 1/4" diameter plunger pumps 4 drops of SAE 40 oil per stroke against 30,000 psig.

Description: Lubricators consist of four integral sight feed and pump assemblies mounted on a rugged cast iron reservoir. They are directly connected to a gear motor and attached to a rigid base.



Pumping rate controlled by fingertip adjustment

Pumping units are easily accessible and removable without disassembling the lubricator. Pumping rate is controlled by positive, fingertip adjustment. Steam or electric heaters are easily incorporated.

(Products of Frontier Industries, Inc., Manzel Div., Dept. CP, 315 Babcock St., Buffalo 10, N. Y. . . . or for more information check CP 4311 on handy form, pages 2 and 3.)

Confidential communication plus fast, simple operation on two-way intercom

Uses: For strictly confidential two-way intercommunication in offices and plants, where people are within earshot of one end of the conversation.

Features: Operation is fast and simple: a handset station, in the exposed area, is used to call a central point to obtain information, issue instructions, or place orders. User simply lifts handset from its cradle, depresses built-in talk-button, and speaks in a quiet tone. His voice, amplified to required volume level, is clearly heard at the central location, where confidential conversation is not necessary.

Employee here answers call through a staff station from across the room — no need to stop work to approach or operate unit. His reply is heard only by person using handset station to originate call. No one else, no matter how close by, can hear the conversation. Where central location is in a large area, a two-way trumpet staff station may be used.

Description: System is not limited to one exposed location — any number of handset stations may be used, permitting personnel to call and talk confidentially.

Catawissa

PERFECT SEAL Unions

HOT FORGED from solid
RECTANGULAR STEEL
BARS to give you SURE-
FIRE PIPING DE-
PENDABILITY

A TYPE FOR
EVERY USE! PERFECT SEAL
even with pipe not
in alignment!



Standard & Double
Extra Heavy
UNIONS

Available with
screwed or socket
weld ends. 3000-
lb. sizes 1/8" to 3";
6000-lb. sizes 1/8"
to 2".



ORIFICE
UNIONS

With screwed or
socket weld ends.
3000-lb. and 6000-
lb. service.

MALE & FEMALE
UNIONS



With steel-to-steel,
bronze-to-steel, stain-
less steel-to-steel or
orifice seats. 3000-lb.
service only.

FULL STAINLESS &
FULL ALLOY
STEEL UNIONS



With screwed or
socket weld ends.
3000-lb. and 8000-lb.
service.

CATAWISSA Ends Guesswork
in Union Requirements!

CVF write for
CATALOG 11
showing the
complete
Catawissa line

CATAWISSA VALVE AND
FITTINGS COMPANY
620 Mill St. • CATAWISSA, PA.

When inquiring check CP 4312
on handy form, pgs. 2-3

CHEMICAL PROCESSING

tially with a central location. A red busy light provided on each handset station illuminates to indicate when system is in use. Handset stations are connected through an amplifier to staff station at central location.

Handset station consists of a black handset 9-1/16" long, 3" wide, 3" deep, with vertical black handset hanger 3-1/16" wide, 2 1/2" deep, and 3-3/8" high. Handset is equipped with retractable coil cord and is suspended by receiver in cradle switch.

Central amplifier is relay-controlled and housed in a ventilated metal case 9 1/4" long, 6" wide, and 6 1/2" high. It operates on 50-60 cycle AC only.

Staff station is housed in a durable metal cabinet 6" wide, 6 1/2" high, and 3 1/2" deep at base. It may be table-, wall-, or ceiling-mounted.

Trumpet-type staff station, constructed of heavy-gauge spun aluminum, is 10" in diam, 10" long with equivalent of a 9" air column.

(Multiple Handset Intercom System is a product of Executone, Inc., Dept. CP, 415 Lexington Ave., New York 17, N. Y. . . . or for more information check CP 4313 on handy Reader Service slip between pages 2 and 3.)

Includes formulas and conversions for vacuum processing

Revised edition of 36-page catalog includes valuable tables of formulas, constants, and conversions frequently used in vacuum processing; solutions to problems of pump selection for typical vacuum systems; and useful information on continuous oil purification and other maintenance procedures for high vacuum pumps.

Installations of company's high vacuum pumps, many of which are illustrated in catalog, include drying of blood plasma; freeze-drying of penicillin, streptomycin, hormones, and other biologicals and pharmaceuticals; metallizing of both metal and plastic parts; impregnation of metal castings, textiles, wood, leather, and electrical equipment; extrusion of clay products; and numerous other applications.

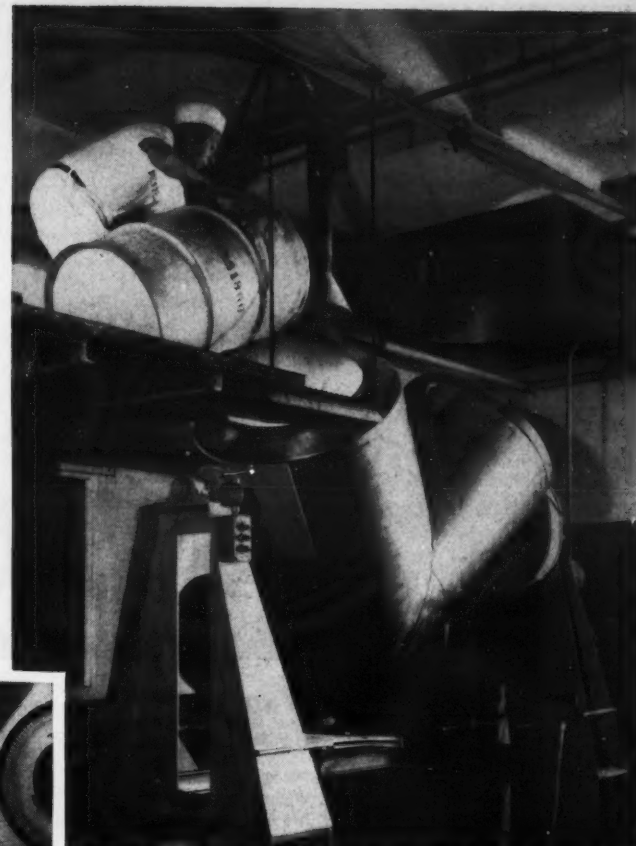
Cat 750 is issued by F. J. Stokes Machine Co., Dept. CP, 5500 Taber Rd., Philadelphia 20, Pa. When inquiring specify CP 4314 on handy form, pages 2 and 3.



Handset on left for exposed area and staff station on right for central location

The
Wm. S. Merrell Company
says:

"p-k twin shell blender
DOUBLED
productive capacity"



Easy loading of p-k twin shell blender is done from special elevated loading platform.

Technician at the Wm. S. Merrell Company, Cincinnati pharmaceutical manufacturer, unloads compound from a p-k twin shell blender. Shown is unique dust collecting nozzle, used to draw dust into piping to outside air-filtering plant.



"The p-k twin shell blender not only doubled our productive capacity, but also further assured us of a complete mixing and blending process. This is essential to provide uniformly accurate dosages of all Merrell pharmaceuticals," states Mr. Frank J. Messmann, Director of Production and Purchasing of The Wm. S. Merrell Company, Cincinnati.

Keeping Merrell pharmaceuticals absolutely free of contamination is a major requirement, successfully met by a p-k twin shell blender with a special dust control collection system.

The unique dust control system draws dust through pipes to an air-filtering plant outside the main building.

p-k twin shell dry blenders are fast and thorough, provide critically uniform blending along with quick cleaning. Because p-k manufactures many kinds of blenders—ribbon, double cone or the twin shell—you can be assured of the right blender for your needs. Write now for Catalog No. 12 giving complete engineering data or send samples of materials for analysis of blending.

the **Patterson-Kelley Co., inc.**

800 Lackawanna Ave., East Stroudsburg, Penn.

101 Park Avenue, New York 17 • Railway Exchange Building, Chicago 4 • 1700 Walnut Street, Philadelphia 3 • 96-A Huntington Avenue, Boston 16 • and other principal cities

When inquiring check CP 4315 on handy form, pgs. 2-3

Material: Activator solution—water with 5% ferro-sulphate.

Problem: Short service life of turbine pumps; sometimes only two weeks.

Solution: First Moyno ran 6 months without a breakdown. Using relief valves, pressure is kept at constant 120 p.s.i. Now using 7 Moynos because of this exceptional service.

Material: 40° copperas crystals in 20% sulphuric acid.

Problem: Low production of diaphragm pump.

Solution: Moyno pump handles an increased percentage of solids, which in turn increases production.

Material: Anti-scale boiler treatment. (Alcohols, oils, anti-foam agents, sludge conditioners.)

Problem: Frequent pump breakdowns caused by back pressure of spray nozzles and abrasion.

Solution: Moyno pumps cut pumping time from 20 minutes to 3, reduced down-time, increased production 200%!

Material: Calcium carbonate slurry.

Problem: Continuous failures of centrifugal pumps.

Solution: Moyno pump still giving perfect service after 1½ years. Service is practically continuous—with pump in operation 24 hours per day.

Material: Caustic solution—for use in mercerizing machines.

Problem: Rotary pumps wore quickly; lost capacity, and did not have enough suction.

Solution: Moyno pumps cut maintenance and repairs to minimum—had ample suction for drawing caustic through the cloth.

Material: Size—containing china clay and latex.

Problem: Centrifugals unable to handle viscosity—causing frequent trouble.

Solution: Moyno pump has been on duty for a year. Pump trouble completely eliminated; no repairs required.

Six Chemicals-Handling Problems... Solved by the MOYNO PUMP!

Features of the MOYNO that may solve YOUR pumping problem

Positive Displacement—Moynos are available to pull up to 29" vacuum while discharging under pressure. Big Moynos deliver up to 250 g.p.m. at pressures to 600 p.s.i.

Gentle—No churning; won't break up semi-solids; won't aerate liquids.

Reversible—The Moyno pumps with equal efficiency in either direction.

Versatile—handles liquids, abrasive slurries, pastes—even potato salad! Rotor and stator are available in stainless steel, other alloys or plastics to meet a wide variety of applications.



Trouble-Free—self priming; won't cavitate or vapor-lock. Just one moving part—no valves to stick, no pistons to gum up. Built for tough service. Easy to maintain.

Looking for a pump with a fast-growing reputation for solving tough pumping problems? Then take a look at the simple, versatile Moyno!

Briefly described above are a few of the many successful case histories proving how Moynos handle jobs where other pumps fail. Why is the Moyno a "problem-solving" pump? For one thing, because it differs completely from conventional pumps... rotary, centrifugal or piston. Just one rugged moving part—a rotor turning within a stator—does the job.

The list of chemicals handled by Moynos gets longer every day. If you have a pumping problem, such as handling abrasive slurries, mild acids, caustics—watery, viscous or even semi-solid—find out if the Moyno can help you! Use the coupon below for prompt, complete information.

Robbins & Myers, Inc.
Pump Division, Springfield 99, Ohio

CP-103

Gentlemen: Please mail free copy of Bulletin 30-B containing details on construction and operation of Moyno Pumps:

Name _____ Title _____

Company _____

Address _____

City _____ State _____

ROBBINS & MYERS • INC.

SPRINGFIELD 99, OHIO • BRANTFORD, ONTARIO



When inquiring check CP 4316 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Costs saved with use of fluteless carbide-tipped drill for plastics and cast iron

Uses: For drilling plastics and shallow holes in cast iron.

Features: According to manufacturer, extreme simplicity of carbide drill makes cost about 1/10th that of conventionally tipped high speed steel drills.

Description: Fluteless drill consists of a shank of drill rod between 50 and 60% of diameter of carbide tip. Shank and tip are joined together by brazing. Due to strength of brazing alloy employed, it is unnecessary to provide steel pockets or similar guides for tip. Thus, not only are simplicity and lower cost achieved, but ample room is left for chips.

Drill is tested at factory by drilling into cast iron with feed of .003"/rev. Braze material built up



Leaves ample room for chips

around tip provides strength and rigid support for tip. Manufacturer guarantees drill against failure of braze, stating it is stronger than material in shank.

By eliminating flutes entirely, this drill opens possibilities for increasing rate of penetration into plastics and non-metallics. In the drilling of cast iron, this drill is most successful in shallow holes. Holes beyond 1½ or 2 diameters deep should be drilled horizontally. Drill is not successful on steel. It is manufactured in sizes from 13/64 to 11/16".

(Product of Hayden Twist Drill Co., Dept. CP, 8626 Lyndon Ave., Detroit 21, Mich. . . . or for more information check CP 4317 on handy form, pages 2 and 3.)

Describes line of screens, feeders, and conveyors

Complete line of company's screens, feeders, and conveyors is described in 28-page, illustrated catalog. Detailed information is contained on screens for sizing, separating, and dewatering of sand, gravel, light aggregate, coal, and other products. Sections are included on gyrating screens; horizontal screens; scalpers; and single, double, and triple decked screens including one that handles damp, sticky materials without blinding.

Other sections are devoted to methods of dewatering sand and gravel, and to company's feeders and conveyors that are said to insure fast, efficient movement of materials.

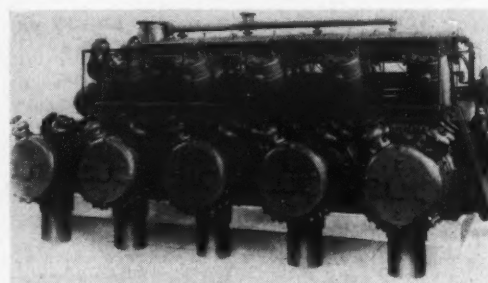
Cat 53 is available from Simplicity Engineering Co., Dept. CP, Durand, Mich. When inquiring specify CP 4318 on handy form, pages 2 and 3.

Fuel costs cut 10% by design of angle compressor: thermal efficiency is higher

Uses: As a compressor.

Features: In addition to cutting fuel consumption to as low as 7500 Btu per hp hr, development produces over 1/3 more hp per cu ft of space than was possible before, according to manufacturer. Engine thermal efficiency is said to be substantially higher — 34% as compared with 30% in earlier models. Cylinder firing pressures are lower. Exhaust temps have been reduced as much as 100°F.

Description: The GMVA compressor has been evolved from manufacturer's model GMV. Unit is built with 4, 6, 8, and 10 cylinders, providing



Unit produces over 1/3 more hp per cu ft of space than possible before

hp capacities from 540 to 1350. Greater range in operation permits handling of overloads up to 35%.

(Product of The Cooper-Bessemer Corp., Dept. CP, Mount Vernon, Ohio . . . or for more information check CP 4319 on handy form, pages 2 and 3.)

Summarizes features of line of air handling units

Features of a complete line of air handling units for industrial and commercial heating, ventilating and air conditioning applications are described in six-page bulletin. Three characteristics of units are featured — heavy welded construction, quiet operation and efficient, stable performance.

Detailed installation possibilities are given for central plant air conditioning, exhausting heat fumes or vapors, and heating and ventilating requirements where cooling is not needed. Such items as sectional construction, all-aluminum wheels, thermal and acoustical insulation, adjustable motor mounting and maintenance accessibility are also covered. A full line of accessories are described including humidifiers, mixing boxes and filter sections.

Bul 1600 is issued by Dept. T-071, Sturtevant Div., Westinghouse Electric Corp., Dept. CP, 200 Readville St., Hyde Park, Boston 36, Mass. When inquiring specify CP 4320 on handy form, pages 2 and 3.

A revolutionary new principle in Coolers . . .

THE holo-flite PROCESSOR
(HOLLOW-FLITE)

Backed by the same well-known organization that pioneered COTTRELL Precipitators, MULTICLONE Collectors and other leading products, the HOLO-FLITE Processor represents a far-reaching advancement in the science of heat-exchanger design. Widely adaptable to various types of cooling and similar applications in industrial processing operations, the HOLO-FLITE handles powdered or granular solids, moist pastes or slurries with equal facility. Moreover, it requires as little as 1/5th the space of other heat exchangers . . . causes no dust, therefore requires no costly or complicated auxiliary recovery equipment . . . and maintains its uniformly high efficiency under modern continuous-flow operations (no stop-and-go "batching" operations are necessary).



Unique Simplicity

Basically, the HOLO-FLITE consists of two or more hollow intermeshing conveyor screws that slowly rotate in a trough or tube. The cooling agent circulates through the hollow flights and shafts of the conveyor screws while the product itself "flows" in the trough where it is constantly rotated into, around, over and under the moving heat-exchange surfaces. The continuous mixing, turning, folding action causes a constant change of contact with the heat-exchange surfaces and results in a high rate of heat transfer. Yet the action is so gentle that there is no dusting and little, if any, abrasion of crystalline particles.

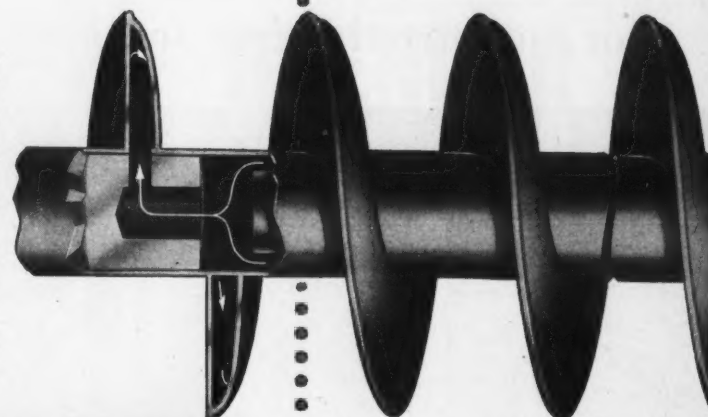
Unlimited Capacity

HOLO-FLITE Processors can be readily adapted to virtually any capacity requirement and are in daily operation on such varied products as sand, cement, cottonseed cake, soybean meal, borax, salt, sugar, baby foods, and many other products. Cooled products can be packaged directly from the HOLO-FLITE discharge, saving time, space and additional handling.

Be sure to investigate HOLO-FLITE savings before you install heat-exchange equipment. To insure maximum operating efficiency at low overall cost, each installation is individually engineered to the job using basic stock-size elements. Contact the nearest Western Precipitation office for further details on the revolutionary HOLO-FLITE Processor—or write direct!



FREE! New 8 Page Bulletin describing HOLO-FLITE features and applications will gladly be sent on request!



► Handles Pastes, Sludges or Solids!

► Up to 80% Saving in Space!

► Permits Continuous, High Efficiency Operation!

A FEW OF MANY HOLO-FLITE ADVANTAGES

WIDE ADAPTABILITY: HOLO-FLITE handles fine-grained, crystalline or powdered solids, pulps, pastes and slurries with equal ease. Heat transfer agent can be refrigerant, cooled or ambient water, or other fluids to provide a wide range of processing temperatures.

SPACE-SAVING COMPACTNESS: Because of its large active heat-transfer surface per cubic foot of space required, the HOLO-FLITE requires only a minimum of space—is 5 to 6 times as compact as other equipment of comparable capacity!

LOW POWER REQUIREMENTS: HOLO-FLITE conveyor screws rotate slowly—usually only 1 to 12 r.p.m. Further, multiple tiers can be driven by one motor, assuring low power consumption.

INSTALLATION FLEXIBILITY: The basic HOLO-FLITE unit is two intermeshing screws in a single trough, but four or six screws per trough can also be installed. Moreover, any number of troughs can be "tiered" on top of one another—trough lengths can be varied from 8 to 20 ft.—screw diameters can be varied from 7" to 16"—to provide virtually any desired capacity in a minimum of space!

Write for full details on the many savings the HOLO-FLITE Processor can bring to your particular applications.

WESTERN
Precipitation
CORPORATION

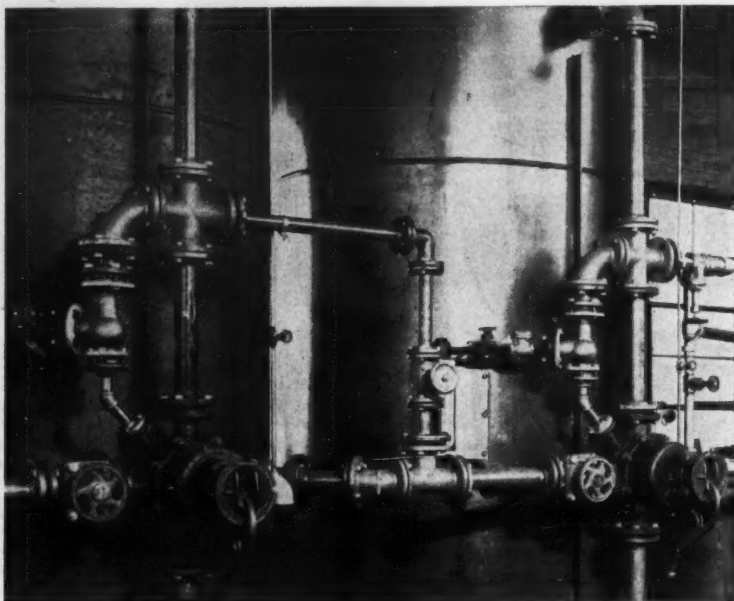
ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

Main Offices: 1023 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA
CHRYSLER BLDG., NEW YORK 17 • 1 N. LA SALLE ST. BLDG., CHICAGO 2
1429 PEACHTREE ST. N.E., ATLANTA 5 • HOBART BLDG., SAN FRANCISCO 4
PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL

When inquiring check CP 4321 on handy form, pgs. 2-3

CUT CORROSION COSTS

install corrosion-resistant
SARAN LINED STEEL PIPE
for long, trouble-free service



Saran Lined Pipe, Fittings and Valves are used in this automatic water de-ionizer in a large water purification system. Installations such as this give trouble-free service for many years.

Saran Lined Pipe Company
2415 Burdette Ave., Ferndale, Mich.

Please send me a copy of your catalog on
Saran Lined Pipe, Valves and Fittings.

Name _____

Title _____

Company _____

Address _____

City _____ State _____

SARAN LINED PIPE COMPANY

2415 BURDETTE AVENUE, FERNDALE, MICHIGAN

When inquiring check CP 4322 on handy form, pgs. 2-3

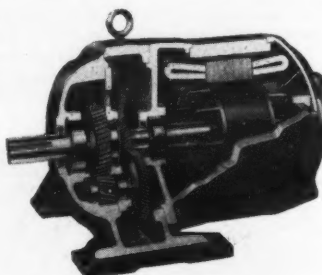
CONSTRUCTION

**Bearing life increased
in gearmotor line by
positive oil seal**

Uses: For single, double or triple speed reduction applications.

Features: Units have positive oil seal between gears and high-speed bearing which lengthens life of bearing by sealing off abrasive matter. A large oil reservoir provides efficient splash lubrication for the gears.

Other features include a locked motor shift pinion to provide positive contact for minimum vibration on reversing service; cast iron pyramidal base for maximum strength,



Cutaway photo of double reduction gearmotor shows construction details

rigidity and prevention of misalignment due to uneven foot mounting; and extra capacity anti-friction bearings for severe operating conditions.

Description: Line of gearmotors presents a wide selection of compact, integral power units with single (780 to 280 rpm), double (230 to 45 rpm) or triple (37 to 7.5 rpm) speed reduction.

Units are available with any of manufacturer's motors — AC, squirrel-cage, wound rotor, DC or multi-speed, in open-protected, splash-proof, totally-enclosed non-ventilated, totally-enclosed fan-cooled and explosion-proof closures. Frame sizes range from 1 to 150 hp. Mountings may be horizontal, sidewall, ceiling or inclined. Also available is a complete integral power unit with manufacturer's disc brake.

(Products of Elliot Co., Crocker-Wheeler Div., Dept. CP, Ampere, N. J. . . or for more information reader may simply check CP 4323 on handy form, located between pages 2 and 3.)

you save 50%
in TANK HEATING and COOLING with
PLATECOIL
(REPLACE PIPE COILS)

- ★ You SAVE 50% in tank SPACE
- ★ You SAVE up to 50% in initial COST
- ★ You have 50% LESS WEIGHT to handle
- ★ You SAVE 50% in maintenance LABOR as plates are changed from outside the tank without dumping solution

. . . besides all these you get faster heating or cooling. Take advantage of the engineering assistance offered by Kold-Hold to help you with your heat transfer problems.

Send for complete
technical manual and
descriptive Bulletin No. P54

PLATECOIL
Division
Tranter Mfg. Inc.
LANSING 4, MICHIGAN

When inquiring check CP 4324 on handy form, pgs. 2-3

**INTERNATIONAL
RECTIFIER
CORPORATION**
EL SEGUNDO
CALIFORNIA

Selenium Photo-Cells



UNMOUNTED CELLS

6 cell sizes.
15 to 750 microamperes at 100 ft.-candles illumination.

WRITE
FOR
BULLETIN
PC-649



HERMETICALLY SEALED

DP-2 (shown above)
25 microamperes*
DP-3 — 50 microamperes*
DP-5 — 600 microamperes*
*At 100 ft.-candles illumination

**INTERNATIONAL RECTIFIER
CORPORATION**
1521 E. Grand Ave., El Segundo, Calif. Phone: ORegon 8-3778
CHICAGO: 205 W. Wacker Drive Phone: FRanklin 2-3889
NEW YORK: 501 Madison Avenue Phone: PLaza 5-8665

When inquiring check CP 4325 on handy form, pgs. 2-3

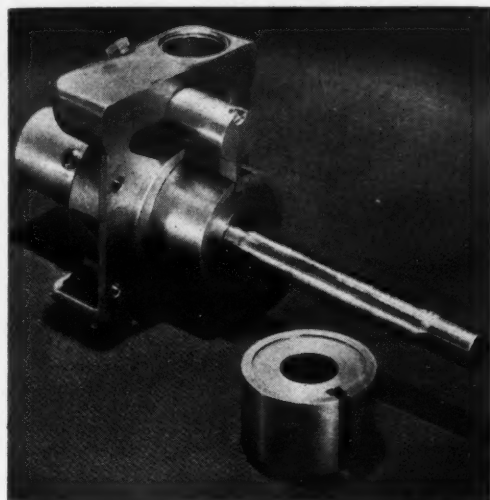
CHEMICAL PROCESSING

**Dangers of scorching minimized
by bronze powder-metal
impellers on pump**

Uses: For the handling of oils and greases. These lubricating fluids range from light bodied cutting oils and hydraulic fluids, to heavier diesel lubes and fuel oil.

Features: Pump has precision machined and sintered bronze powder metal impellers, which act like oilless bearings operating in a lubricating medium in that they absorb oils like a sponge and retain them, thus minimizing dangers of heat seizures and scorched impellers. It has positive displacement delivery, the result of two axially oscillating impellers which deliver continuous non-surging flow without foaming or air entrainment.

Description: Maximum capacity of pump is 10 gpm. It is self-priming in low temperatures. Unit's operation, characteristic of its design, is said to provide high efficiency with less hp. Pump is suit-



Positive displacement delivery assures non-surging flow

able for operating oil temperatures up to 500°F. It may be operated submerged. Unit will pump in either direction and in any position.

(Product of Eco Engineering Co., Dept. CP, 12 New York Ave., Newark 1, N. J. . . or for more information check CP 4326, pages 2 and 3.)

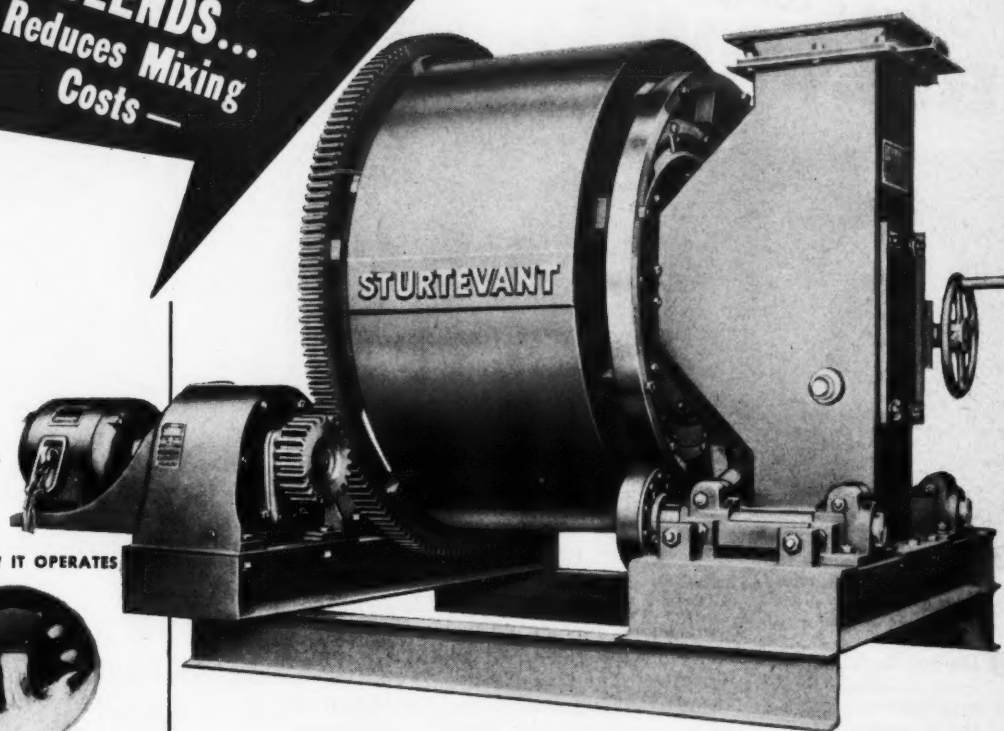
Presents portable power tools

Descriptive information and specifications on electromagnetic hammers and hammer drills, complete line of portable electric drills, screwdrivers, nut runners, polishers, sanders and grinders are presented in 30-page catalog.

Cat 537 is issued by Syntron Co., Dept. CP, 110 Lexington Ave., Homer City, Pa. When inquiring specify CP 4327 on handy form, pages 2 & 3.

**4 WAY
MIXING ACTION
PRODUCES
HOMOGENEOUS
BLENDS...
Reduces Mixing
Costs —**

**with the
STURTEVANT
BLENDER**

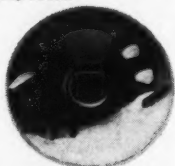


HERE'S HOW IT OPERATES



RECEIVING

As the materials are received, they are picked up by scoops and cascaded from the top of the machine. At the same time, the revolving drum forces the materials from both ends toward the center of the drum . . . while the swinging chute, which is in mixing position, produces a fourth lateral mixing action.



DISCHARGING

By simply throwing a lever, the inlet is closed and the blender is in discharging position. The completely mixed materials drop off the lifting scoops and discharge through chute without segregation of ingredients.

Four separate mixing actions in the Sturtevant Blender assure complete blending of various materials regardless of weights, densities, finenesses, or other physical properties.

This mixing action provides a thoroughly blended product with no substances floating to remain unmixed.

Sturtevant Blenders are available in mixing capacities from 500 to 20,000 pounds. Write for information or engineering assistance.

STURTEVANT MILL COMPANY

119 CLAYTON STREET, BOSTON 22, MASSACHUSETTS

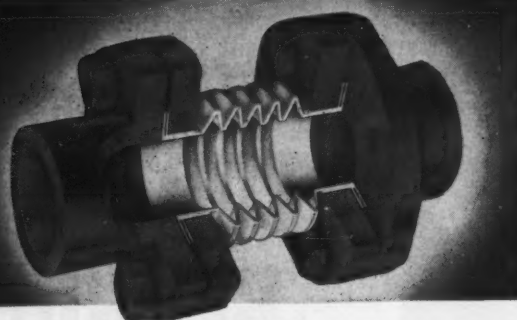
Designers and Manufacturers of

CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS • MECHANICAL DENS
and EXCAVATORS • ELEVATORS • MIXERS

When inquiring check CP 4328 on handy form, pgs. 2-3

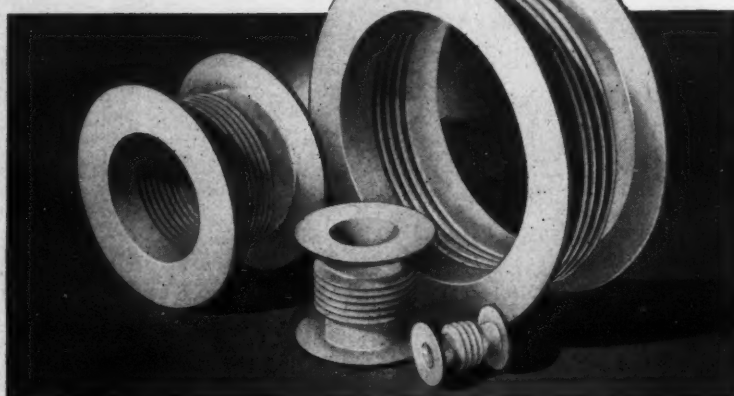
NOW...

to handle
those
difficult
piping
problems



JOHN CRANE

Offers a complete line of
BELLOWS MADE OF TEFLON*



- ① **Chemically inert**
—will handle all corrosive liquids, petroleum products, gases and solvents.
- ② **Life-long flexibility**
—will not damage or fatigue under severe vibration or repeated expansion and contraction.
- ③ **Outstanding electro-chemical properties**
—eliminate electrolysis in the handling of chemicals, acids, etc.
- ④ **Wide temperature range**
—flex perfectly and otherwise physically unaffected over a wide temperature range.

Further information on Teflon parts and products, including bellows connectors, pump and valve packings, tubing and other molded forms, is available in "John Crane's" 12-page illustrated catalog, The Best in Teflon. Send now for your free copy. Crane Packing Company, 1821 Cuyler Avenue, Chicago 13, Illinois.



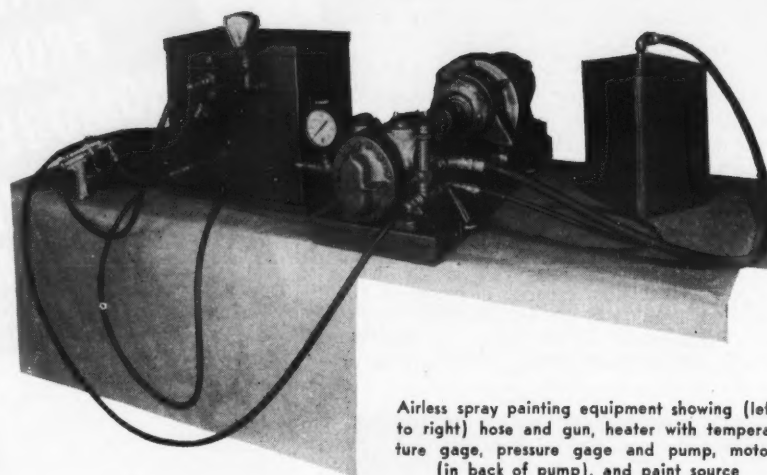
JOHN CRANE

CRANE PACKING COMPANY

*DuPont Trademark for tetrafluoroethylene resin.

When inquiring check CP 4329 on handy form, pgs. 2-3

**construction
and maintenance**



Airless spray painting equipment showing (left to right) hose and gun, heater with temperature gage, pressure gage and pump, motor (in back of pump), and paint source

**Airless Spraying Saves
Up to 50% of Paint**



Health hazards eliminated and costs reduced by painting method which utilizes heat plus hydraulic pressure, rather than additional solvents, to do the job effectively

USES: For maintenance and production painting of objects which have heretofore been brushed, dipped effectively or air-spray painted, and for general paint applications.

Features: Method is said to save as much as 50% of paint on jobs where loss is due to overspray. Also health hazard to operator is eliminated because there is no spray rebound with use of airless system. Costs are saved too, by elimination of need for large exhaust system in spray booth, although manufacturer recommends using a slight exhaust for fumes which are solvent.

Benefits are also said to accrue from an improved finish (heavier film thickness can be achieved in one operation) and better paint adhesion.

Description: Airless spray painting method works on the principle of heating paint to lower its viscosity to a watery consistency. This heat also builds up a vapor pressure which causes atomization when coupled with the mechanical force of the liquid released through a proper restrictive nozzle (as water is broken up by a garden hose nozzle). Upon release to atmosphere, solvents effect an additional breakup of paint particles.

All types of finishes can be sprayed — paints, lacquers, synthetics, wrinkles, varnishes — and the material can be very thin or very heavy bodied, as desired. Several finishes present a solvent balance problem, but manufacturer reports that more research in formulation of these materials for this method is producing better results.

Paint is syphoned by a pump into the system, sent through the heater to spray gun, and the unused portion returned to pump. Circulation is necessary to maintain hot paint at gun nozzle at all times. Pressure in circuit is maintained (generally between 300 to 600 psi), by a pressure relief valve on return side. Spray gun is nothing more than a trigger and is lighter than conventional unit. Spray performance, volume and angle, is controlled by selection of nozzle which is available in degrees of fan width from 15 to 110°.

Pump is driven by an explosion-proof electric motor, generally $\frac{3}{4}$ hp, and has an output of one gpm. Heater is 4 kw, 110/220 v, AC, single phase only. Both these units are UL approved for hazardous location use. Fluid hose is specially designed to withstand pressures to 3000 psi and hot solvents.

(Airless Spray Painting method and equipment are a development of Bede Products, Inc., Dept. CP, 1110 Brookpark Rd., Cleveland 9, Ohio . . . or check CP 4330 on form, pages 2 and 3.)

Single sprocket may be mounted on any size shaft by using split, taper-lock bushings

Construction of split, taper-lock bushings makes it possible to mount single sprocket on shafts of various diameters. Sprocket and bushing units, available in many sizes for majority of roller chain drive applications, are said to eliminate costly and time-consuming reborring of sprockets to fit shafts and provide tight fit without grinding.

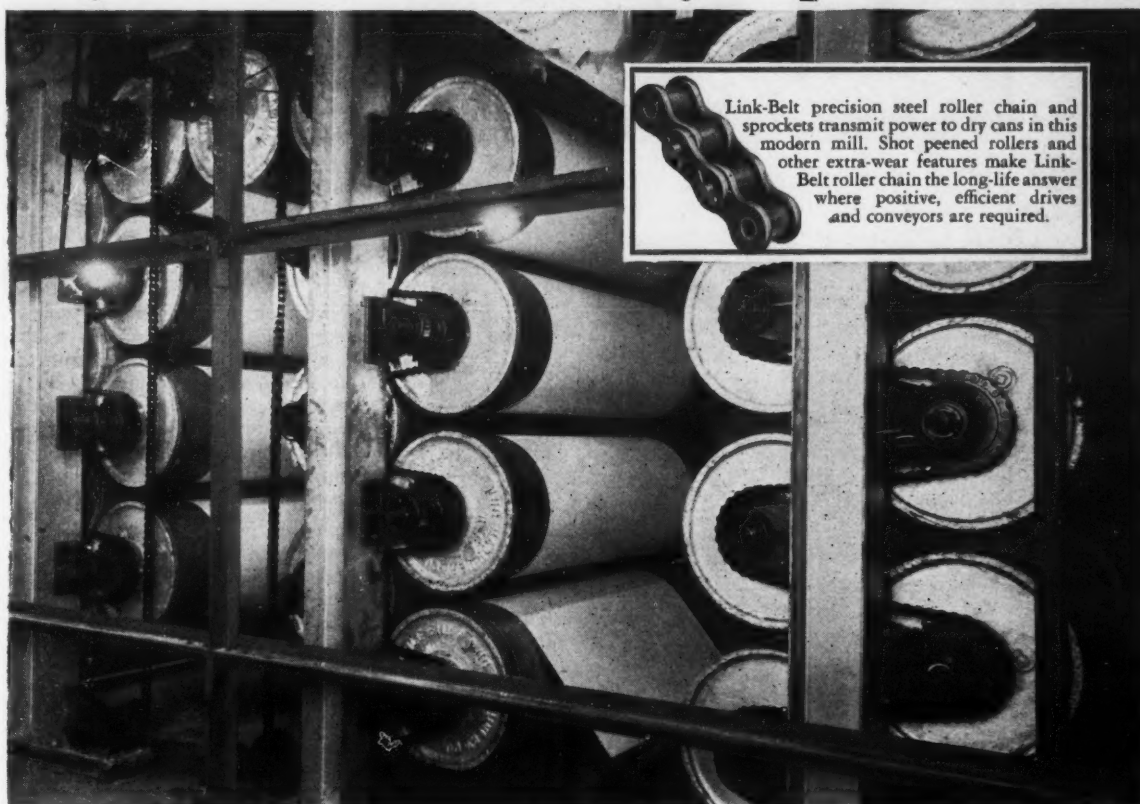
Complete assembly of sprocket and bushing is slipped on shaft and tightened with two screws.

Removal of assembly from shaft is also simple and consists merely of removing screws and using one of them as a jack screw. Sprockets have no flange and no protruding parts and occupy no more space on the shaft than standard sprockets. Flush design contributes materially to safety.

These sprockets reportedly cost no more than old type "B" units and, as replacements, can be mounted on original hub thus reducing cost of replacements. Split tapered bushing locks sprocket to shaft and can close in like a collet to fit undersized shafts. Finally, since only a bushing change is needed to fit various shaft sizes, fewer sprockets are required as spares for plants using many drives.

(Union Jiffy Sprockets and Bushings are manufactured by The Union Chain & Manufacturing Co., Dept. CP, 1949 Emmons St., Sandusky, Ohio . . . or check CP 4331 on form, pages 2 and 3.)

Is there one chain that best meets your drive or conveyor problem?



Link-Belt precision steel roller chain and sprockets transmit power to dry cans in this modern mill. Shot peened rollers and other extra-wear features make Link-Belt roller chain the long-life answer where positive, efficient drives and conveyors are required.

You'll find the answer in LINK-BELT's complete chain line... a size and type for every job

The application shown above is an example of how you can select the *one* chain best suited for a particular need from the complete Link-Belt line. And each chain is engineered to provide more efficient service at lower cost than so-called general purpose chain.

Whatever your requirements, you are assured of the *right* chain for the job when you rely on Link-Belt. And, remember—a chain bearing the Link-Belt double arrow is your guarantee of longer chain life.

For information on the complete Link-Belt chain line, see the Link-Belt representative near you. He has the answers for efficient, low-cost drive and conveying chain performance.

LINK-BELT
CHAINS AND SPROCKETS

Typical chains from the complete LINK-BELT line



Ewart Detachable Link-Belt—A widely used, popular chain for average or normal-duty service on conveyors, elevators and drives.



Class 400 Pintle Chain—Closed end design keeps out dirt, makes excellent service medium for drives, elevators, conveyors.



Double-Pitch Precision Steel Roller Chain, for conveyor and power transmission applications.



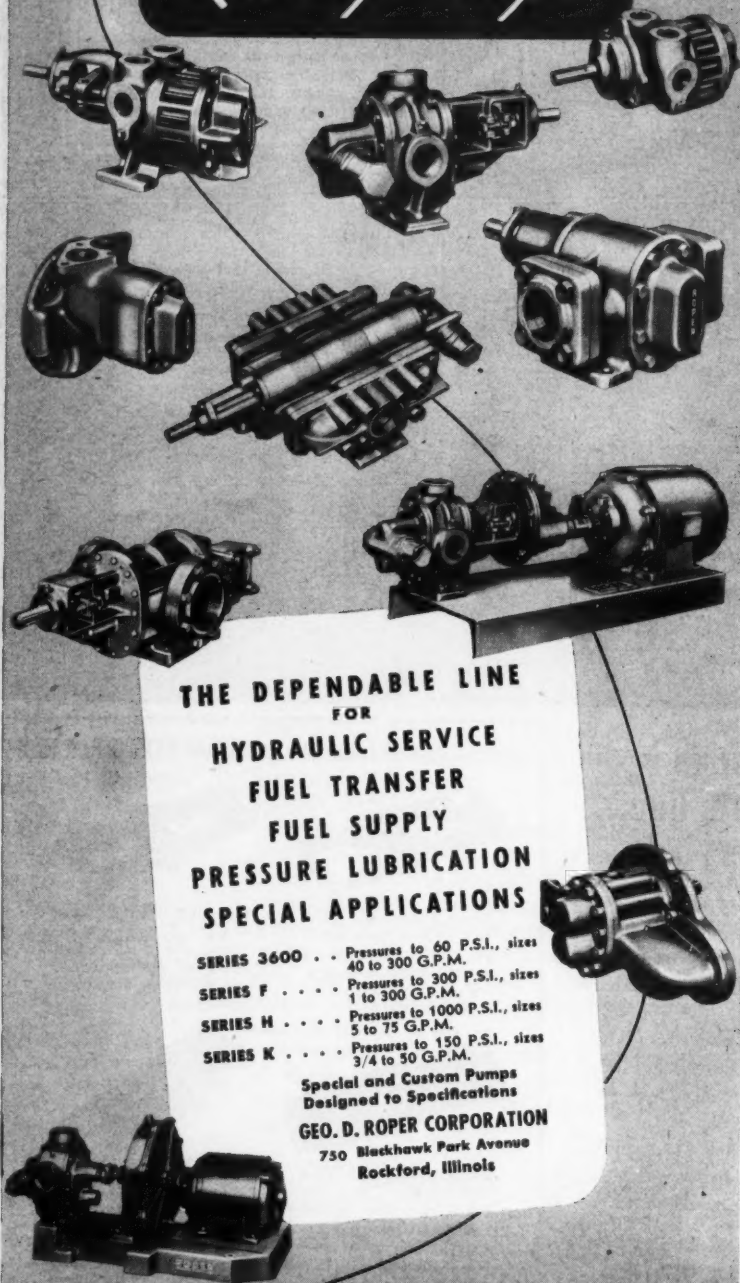
Silent chain, for smooth, high-speed drive service, from fractional to 2500 horsepower.

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities. 13,191-C

When inquiring check CP 4332 on handy form, pgs. 2-3

ROPER

Rotary Pumps



**THE DEPENDABLE LINE
FOR
HYDRAULIC SERVICE
FUEL TRANSFER
FUEL SUPPLY
PRESSURE LUBRICATION
SPECIAL APPLICATIONS**

SERIES 3600 . . . Pressures to 60 P.S.I., sizes 40 to 300 G.P.M.
SERIES F . . . Pressures to 300 P.S.I., sizes 1 to 300 G.P.M.
SERIES H . . . Pressures to 1000 P.S.I., sizes 5 to 75 G.P.M.
SERIES K . . . Pressures to 150 P.S.I., sizes 3/4 to 50 G.P.M.

**Special and Custom Pumps
Designed to Specifications
GEO. D. ROPER CORPORATION
750 Blackhawk Park Avenue
Rockford, Illinois**

Sales and Service Representatives in Principal Cities

When inquiring check CP 4333 on handy form, pgs. 2-3

CONSTRUCTION

**Clean plant at less cost
provided by modern
floor sweeper . . .**

will cover up to 20,000 sq ft per hr in unobstructed areas

Uses: For plant or warehouse sweeping jobs, inside or outside.

Features: These manual sweepers are able, with a wall brush on each side, to sweep a 40" path, and up to 20,000 sq ft of unobstructed area per hour. A definite savings is thus realized in time and manpower.

Description: Industrial floor sweeper is a simple, rugged unit — easy to push, pull, or maneuver. No special skill is required to operate the sweeper. It is compact enough to use almost anywhere. It efficiently picks up virtually anything — dirt, paper, trash, chips, scrap, and litter of all kinds.

Units are built for long, trouble-free service. Brush fiber is scientifically mixed for light or heavy sweeping and long wear. Extra soft fiber and extra stiff fiber are



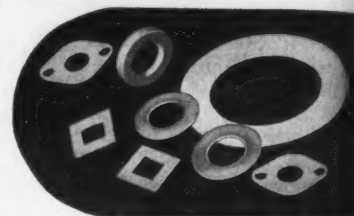
Unit is compact enough to use almost anywhere

available. There are three dual brushes, making six individual brush strips. Brush fiber is securely fastened in a metal brush strip and easily replaced. An adjustable brush bracket compensates for fiber wear.

Collecting hopper is large, light in weight, and easily removed. Handle is of reinforced, heavy wall steel tubing. Drive gear is cast as an integral part of wheel and is enclosed. Pinion gear is made of

R/M Teflon* GASKETS

**for
VALVES,
PUMPS,
STILLS
and other
chemical
equipment**



Wherever you handle acids, caustics or other chemicals R/M Teflon Packings and Gaskets will give you permanent resistance to chemical action. The diversified line includes "envelope" type gaskets as well as solid gaskets in round, square and irregular shapes. Also gaskets for handholes and manholes on stills and distillation columns, for covers of kettles and autoclaves, for flanges on glass and glass-lined pipe, and for a wide range of equipment. If you do your own cutting, order R/M Teflon rods, sheets and tubes. Catalog on request.

*Du Pont trade-mark for its tetrafluoroethylene resin

R/M PACKINGS

RAYBESTOS-MANHATTAN, INC.

PACKING DIVISION, MANHEIM, PA.

When inquiring check CP 4334 on handy form, pgs. 2-3

LENAPE

STUDING OUTLETS

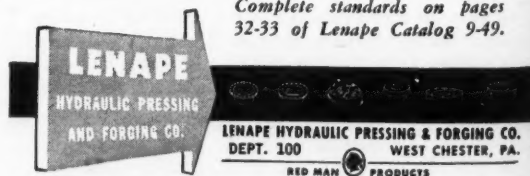
offer many advantages

Curved Studing Outlets or Pads in ASA sizes and standards provide reinforcement of the shell opening. Studing outlets, naturally short in height and providing reinforcement of the opening, have design appeal, economy in price and fabrication, and advantages in use.

Important applications include interdeck access openings on small diameter towers or columns, boiler mountings, clean-out or observation ports, and similar uses in close-clearance locations.

Sizes 16" and larger (even to 30" I.D.) are ideal access openings and in 18" and 20" sizes are the most modern and economical manway for LPG tanks.

Complete standards on pages 32-33 of Lenape Catalog 9-49.



When inquiring check CP 4335 on handy form, pgs. 2-3

CHEMICAL PROCESSING

ETS

or other
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gaskets
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and glass-
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S

AN, INC.

HEIM, PA.

n, pgs. 2-3

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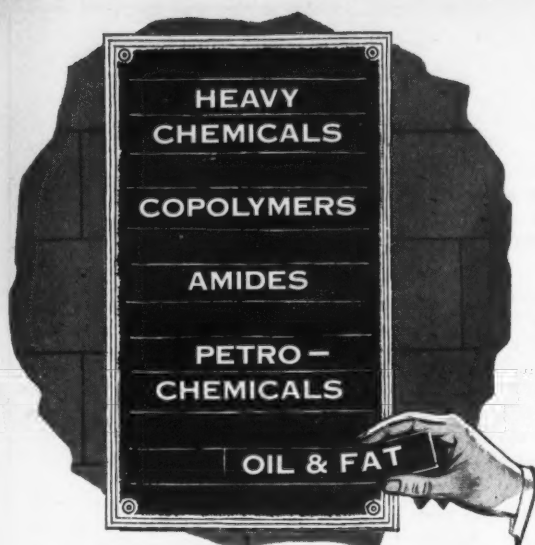
ideal
most
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pages
9-49.

ING CO.
STER, PA.

a, pgs. 2-3

SSING



Oil and Fat Industry uses **ELECTRUNITE** Heat Exchanger Tubes

● Add to the growing list another industry that depends on Republic ELECTRUNITE Heat Exchanger Tubes. And for good reasons.

The oil and fat industry has a continuous process. When they shut down it means time. And money. And higher production costs.

Tubing that rolls in easily can cut costs. ELECTRUNITE tubing does because it's uniformly ductile, easily workable. Uniform wall thickness is important, too. And so are uniform diameter, uniform concentricity and uniform strength. It meets ASTM Specification A-214 for carbon and A-269 in stainless analyses. It's also made to meet many customer specifications.

You'll find all these advantages, and many others, only in Republic ELECTRUNITE Heat Exchanger Tubes. There are no hidden defects. ELECTRUNITE Tubes are made from flat-rolled steel that's inspected on both sides *before* the tubing is formed. It's free from scale, scabs and slivers, has a fine surface that resists corrosion. No longitudinal thin spots, either.

For new equipment . . . or re-tubing . . . it will pay you to specify ELECTRUNITE Pressure Tubes. Available in both carbon and stainless steel analyses. Write for Booklet CEC-53 for all the facts.

STEEL AND TUBES DIVISION REPUBLIC STEEL CORPORATION

206 EAST 131st STREET • CLEVELAND 8, OHIO
Export Department: Chrysler Building, N. Y. 17, N. Y.



ELECTRUNITE — The Original Electric Welded Boiler Tube

When inquiring check CP 4336 on handy form, pgs. 2-3

CONSTRUCTION

high tensile powdered iron, impregnated with oil to give longer service.

Sweepers are available with two sweeping widths — 20 and 28 inches — and in three types. Wall brushes for attachment on each side of unit are optional.

(Product of Parker Sweeper Co., Dept. CP, Springfield 99, Ohio . . . or for more information reader may simply check CP 4337 on handy Reader Service slip between pages 2 and 3.)

Drill press is converted to lead screw tapping with larger tool

Uses: For 5/16 to 5/8" tapping, tool increases range of lead screws and "Auto-tap" lead screw attachments.

Features: By use of this larger type of lead screw, it is reported that any drill press set up for tap-



Increases range of lead screws
and tapping attachments

ping can easily be converted to a lead screw tapping-type machine. With lead screw in a pitch corresponding to that of the tap being used, lead screw, not operator, guides and drives tap. Result is a perfectly tapped thread.

Description: These larger 1" diam lead screws for driving taps are furnished in a variety of pitches including 27 and 18 pitch for 1/8 and 1/4" pipe taps. Holding chuck furnished with lead screw will take tap shanks up to 3/8". Special collets accommodating larger size taps are also available. Threads of lead screws are precision ground for smoothness, accuracy and long wear. Precision tapped split nut is specially designed to provide for wear "take-up".

("Auto-tap" lead screw is a product of Automatic Methods, Inc., Div. 68, Dept. CP, 965 W. Grand St., Elizabeth, N. J. . . . or for more information check CP 4338 on handy Reader Service slip, pages 2 and 3.)



DRY, FRESH AIR For a Supersonic WIND TUNNEL

● New and improved, this NIAGARA METHOD that effectively dries outdoor air for a wind tunnel used for testing at supersonic speed, can be trusted to give you the best air conditions for your purpose:

- to dry your materials or products
- to prevent condensation or moisture damage
- to protect your moisture-sensitive processes
- to give you an atmosphere in which your product can be packaged or stored safely.
- to give you exactly the right atmospheric conditions for testing materials
- to put "fresh air" back into your air conditioning, increasing its capacity and effectiveness

The Niagara "fresh air" Method removes the excess moisture from outdoor air by contact with an absorbent liquid in a spray chamber. The liquid contact temperature and the absorbent concentration, both controlled thermostatically, determine the amount of moisture in the conditioned air. Heating or cooling the air is a separate function. Therefore, you can easily and inexpensively have a precisely controlled condition without the use of moisture sensitive instruments.

The Niagara Absorbent Spray Method is noted for solving the really difficult problems of air conditioning. Write for complete information.

NIAGARA BLOWER COMPANY

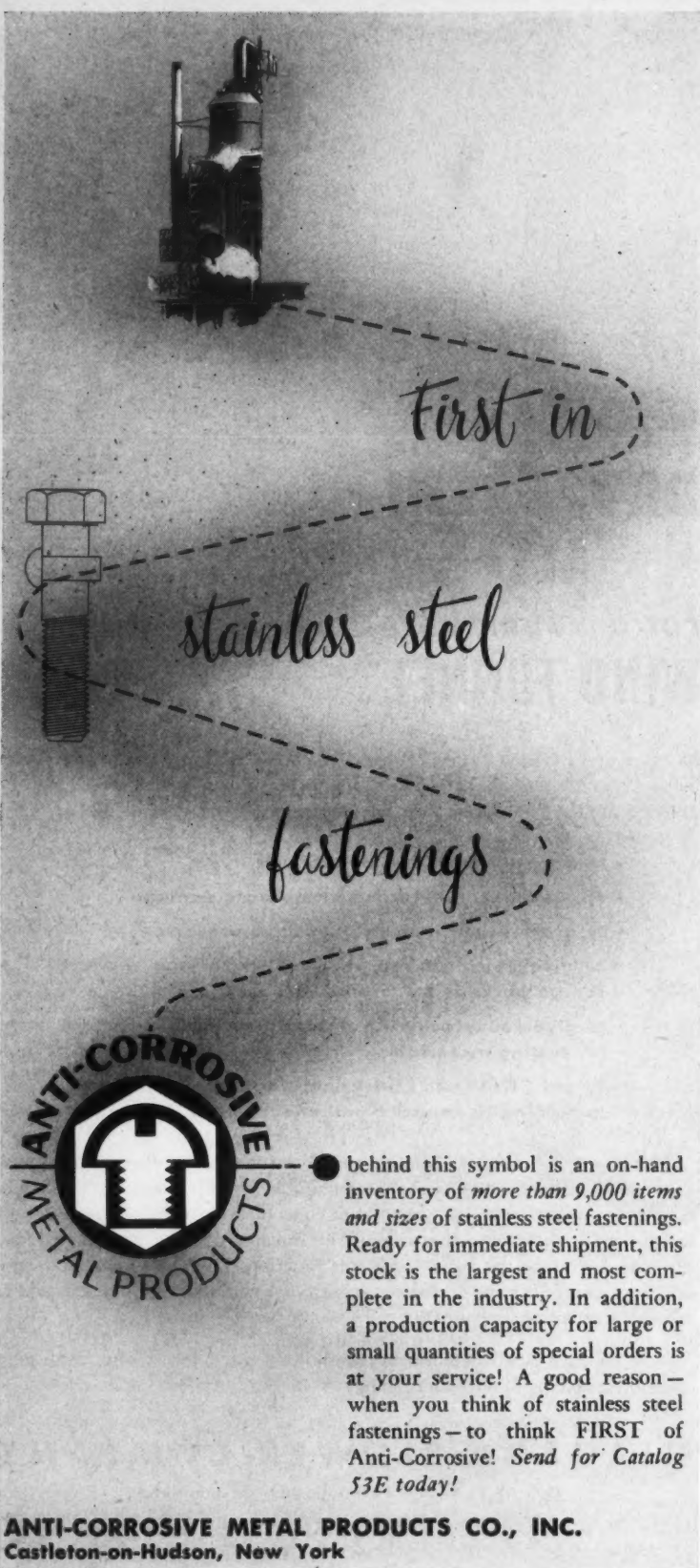
Over 35 Years' Service in Industrial Air Engineering

Dept. CP, 405 Lexington Ave.

New York 17, N. Y.

Field Engineers in Principal Cities of U. S. and Canada

When inquiring check CP 4339 on handy form, pgs. 2-3



First in

stainless steel

fastenings

● behind this symbol is an on-hand inventory of *more than 9,000 items and sizes* of stainless steel fastenings. Ready for immediate shipment, this stock is the largest and most complete in the industry. In addition, a production capacity for large or small quantities of special orders is at your service! A good reason—when you think of stainless steel fastenings—to think **FIRST** of Anti-Corrosive! *Send for Catalog 53E today!*

ANTI-CORROSIVE METAL PRODUCTS CO., INC.
Castleton-on-Hudson, New York

When inquiring check CP 4340 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

Strong, water-insoluble strippable coating has many applications

This fast-drying, tough, strippable coating is supplied as a solvent solution and is easily applied by dipping, brushing, or spraying. It is said to be water-insoluble and extremely strong even in thin gages.

Coating is used for protection of aluminum and other metals during drawing and general fabrication, and for the general protection of glass, phenolic laminates, and similar surfaces. It is simply applied to surface and allowed to dry. It can be easily removed, when desired, by stripping or peeling back entire coating in one piece. It is bright red in color so that operator can quickly determine what sections have been treated.

Material can also be used in place of masking tape to protect certain areas during painting. Unlike masking tape which requires a series of overlaps when applied to irregular contours, coating, because it is liquid and flexible, can be applied as a smooth covering over any surface.

Another interesting use is for application to spray booths. Interior of booth is covered with coating. Excess paints and enamels from regular painting operations will build up on the original coating and can be peeled off in large slabs or sections when desired.

(CD Strip 100 is a product of Chemical Development Corp., Dept. CP, Danvers, Mass. . . or for more information check CP 4341 on handy form, pages 2 and 3.)

Higher dielectric strength, physical toughness offered by silicone rubber coating material

A putty-like silicone rubber coating compound promises marked improvements in electrical insulation and may eliminate many expensive metal cans now protecting coils and other small electrical components, according to manufacturer. Possessing a combination of physical toughness and electrical strength undiminished over a wide temperature range, the versatile material also is useful for such non-electrical products as heat resistant engine gaskets and flexible heater ducts.

This rubber is said to have a higher dielectric strength than any other known silicone rubber coating material. It is predicted that the compound will find wide application for Class H insulation in electrical equipment used under hot or moist conditions. Material is said to retain its dielectric strength after exposure to temperatures as high as 315°C.

Compound can be coated on glass tapes, glass wrappers, and other insulating materials at lower cure temperatures and 30% faster than has heretofore been possible, it is claimed. As a dipping or encapsulating material it is said to provide electrical equipment with a tough, flexible film that protects against moisture and physical damage at the same time that it insulates electrically.



Every Article in CHEMICAL PROCESSING

is
"Staff Written"

Every article in **CHEMICAL PROCESSING** is terse, brief, to-the-point . . . yet packed with essential facts of developments important to every man in chemical processing.

For every article is "Staff Written." Our Editors dig out the vital news-facts, then write them in the fewest possible words. That's why you read so much . . . keep up with developments . . . in short reading time. You don't have to "wade through" long, hard-to-read articles.

That's why you don't find these articles signed . . . every one is "Staff Written." It's the most difficult kind of editing, but it pays big dividends to every busy reader.



CONSTRUCTION & MAINTENANCE

Whether applied to glass insulation or direct to electrical components themselves, material is suggested by manufacturer as a means of overcoming the cracking problems inherent in brittle resin products. The rubber is said to have excellent abrasion resistance and is believed to be the toughest silicone rubber coating compound yet developed. It remains flexible at minus 60°C, and neither softens nor flows at 315°C. Compound is supplied as a 100% solids material, or as a 35% solids dispersion in xylene.

(Product of Chemical Div., General Electric Co., Dept. CP, 1 Plastics Ave., Pittsfield, Mass. . . or for more information check CP 4342 on handy form, pages 2 and 3.)

Lightweight hose for suction applications will not kink or collapse . . .

can be grounded to eliminate static electricity

Uses: Hose is especially designed for pressure and suction handling of water.

Features: Hose is light in weight, will not kink or collapse, maintains full opening in any position, and can be grounded to eliminate static electricity.

Description: Product is reinforced with two layers of horizontal-braided rayon cord, plus a helix of high tensile spring steel wire. Layers of reinforcement are separated by a layer of rubber to eliminate internal chafing of reinforcing cords and wire. Hose is available in 1¼ to 3" diameter sizes.

(Revolc Water Suction Hose is a product of Quaker Rubber Corp., Div. of H. K. Porter Co., Inc., Dept. CP, 4915 Comly St., Philadelphia 24, Pa. . . or for more information check CP 4343 on handy form, pages 2 and 3.)

Discusses structural design — with aluminum

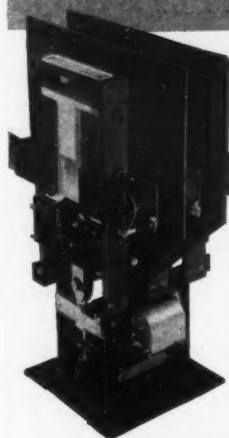
Featuring an article on structural designing with aluminum, four-page publication includes details on how weight savings can be effected by choosing aluminum structural parts having the same strength and rigidity as comparable wood or steel structures. Also presented is a pictorial sequence on the use of aluminum in the petroleum industry. Here again aluminum's features of weight advantage and immunity to corrosion in many applications are cited.

A question-and-answer page features information on joining tube ends, soldering aluminum, infrared reflectivity, aluminum arrows, terrazzo floor strips, storing alloys, and forming spring-back. An article on "Finishes For Aluminum" is included.

Technical Advisor No. 21 is available on letterhead request to Reynolds Metals Co., Dept. CP, 2500 S. Third St., Louisville 1, Ky.

which contactor meets your needs AIR or OIL?

Either may be built into your Allis-Chalmers Type H starter along with meters, overload relays, current limiting fuses, auxiliary switches . . . the coordinated components dictated by your application for complete protection of man, motor and machine.



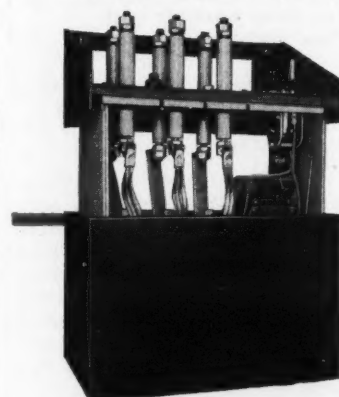
AIR-BREAK CONTACTOR

When the going's rough . . . that's the place for the Type 256 air-break contactor. Frequent starting, inching, reversing or dynamic braking are taken in stride by this rugged performer. And, of course, fire hazard is greatly reduced. No turning shafts, shaft bearings and flexible leads to cause maintenance headaches. Double-break contacts, vertical action and dual blowouts provide long, trouble-free operation.

OIL-IMMERSED CONTACTOR

Got atmospheric troubles? The Type MO oil-immersed contactor will perform heavy duty starting service in dust-laden, corrosive and very moist atmospheres. Contactor is of the time-proved clapper type. Self-cleaning, rolling-wiping action extends contact life. Make and break arcing occurs only on tips. Self-aligning E type magnet provides perfect armature seating . . . long, quiet operation. Permanent windlass tank-lifter simplifies maintenance.

A-4103



ALLIS-CHALMERS Type H Starters

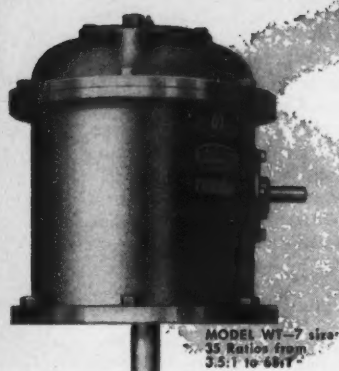
FOR 2300 TO 5000
VOLT MOTORS

Call Your Nearby A-C Representative or Write
Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 14B6410B.

ALLIS-CHALMERS



When inquiring check CP 4344 on handy form, pgs. 2-3



WHICH AGITATOR DRIVE DO YOU NEED?



This quick review of Nettco Agitator Drives gives an idea of the scope of standardized Nettco agitating equipment. These models are available in a complete range of ratios, horsepower, and speeds. Each Drive is fully enclosed and contains a minimum of moving parts. It operates with quiet, anti-friction bearings, assuring trouble-free, efficient service on the job. Send for Catalog 530 — get all the facts on Nettco engineered agitating equipment — the first choice of leading chemical and process industries. New England Tank & Tower Company, 93 Tileston Street, Everett 49, Massachusetts.



When inquiring check CP 4345 on handy form, pgs. 2-3

CONSTRUCTION

Improved phenolic resin coating announced

A phenolic insulation coating for resistors, capacitors, condensers, and coils is claimed to be an improvement over a similar material announced by company 3 years ago.

This resin, it is stated, produces a denser, tougher coating which has better electrical properties and is more water resistant than its predecessor.

Compound is supplied in powder form. Before using, it is mixed with suitable solvents to form a putty-like paste of proper consistency for dip application. After coating, parts are usually air-dried at room temperature for several hours to eliminate most of the solvent. This is followed by baking at 300 to 325°F for one to two hours to cure thoroughly the resin binder.

If color coatings are desired, resin-soluble or alcohol-soluble dyes or pigments can be added to the dipping mix.

(16382 Resin is a product of Durez Plastics & Chemicals, Inc., Dept. CP, North Tonawanda, N. Y. . . . or for more information check CP 4346 on convenient Reader Service slip between pages 2 and 3.)

High traction, no buffing for shine possible with floor finish . . .

one gallon is said to cover from 1000 to 1500 sq ft

Uses: For floor finishing.

Features: Protective floor finish is said to give an extremely high gloss without buffing, provide highest possible traction on any kind of floor including terrazo and have superior wearability. Quick drying and easy to apply, one gallon of material is said to cover approximately 1000 to 1500 sq ft of floor area.

Description: Water-based industrial floor finish, called Grip-sheen, is primarily a solubilized synthetic resin. Material has added advantages in that it will blend well with surrounding areas without showing over-lap marks and is easily maintained by damp mopping.

REPUBLIC VALVES

INDUSTRIAL • CHEMICAL • AIRCRAFT

J.I.C. AND AN STANDARD TUBE ENDS

Skilfully engineered 2, 3, and 4-way Plug Valves are built by Republic in brass and aluminum alloy, sizes $\frac{1}{8}$ " to 1". Hydraulic Relief Valves opening at pressures up to 450 psi made in brass, aluminum alloy, steel, and stainless steel, sizes $\frac{1}{8}$ " to $\frac{3}{4}$ ". Pipe, AN or J.I.C. tube ends, or combinations.

Also manufacturers of high quality globe, needle, low and high-pressure check valves, and special valves to specifications.

Write for complete catalog and name of nearest distributor.



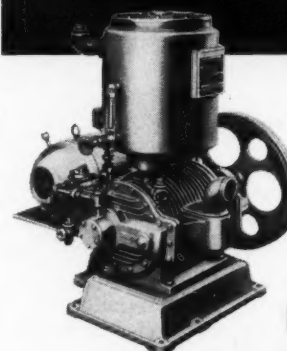
RM

REPUBLIC MANUFACTURING CO.

1930 WEST 77TH STREET • CLEVELAND 2, OHIO

When inquiring check CP 4347 on handy form, pgs. 2-3

DO YOU NEED VACUUM up to 10 microns or more?



You get down to your working vacuum faster with

BEACH-RUSS TYPE RP

ROTARY VACUUM PUMPS

They also give you longer service life and lower maintenance costs, because of their superior mechanical efficiency.

WRITE FOR RP PUMP BULLETIN

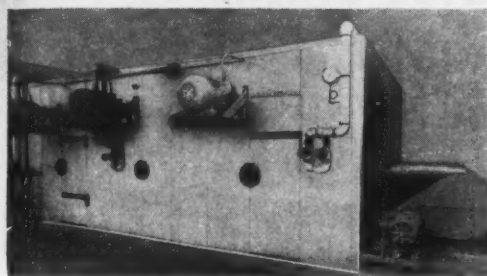
BEACH-RUSS COMPANY

46 CHURCH STREET • NEW YORK 7, N. Y.

When inquiring check CP 4348 on handy form, pgs. 2-3

CHEMICAL PROCESSING

CONSTRUCTION



"NATIONAL" CONVEYOR DRYER

Engineered to assure unequalled uniformity and speed under critical drying conditions, and to provide the lowest possible cost per unit of product dried.

Sizes range from small, compact 8' x 12' units to 300' long tunnel type constructions. Single or multiple apron — perforated, solid, wire mesh or slat. Cross, vertical, through or reverse circulation, or any combination.

Special features include flexibility of operation, ease of maintenance, and unit construction for economical future expansion.

Write for Complete Information

Chemical Dryers of
All Types and Sizes



Special Drying and
Heating Equipment

THE NATIONAL DRYING MACHINERY CO.
2709 N. Hancock Street, Philadelphia 33, Pa.

When inquiring check CP 4349 on handy form, pgs. 2-3

ALCONOX.....

**Outsells and Outperforms
All Other
HOSPITAL and LABORATORY
DETERGENTS**

For less than 2½ cents a gallon, all laboratory glassware, metalware, porcelain, silverware, etc., can now be kept sparkling clean and film-free with a minimum of effort.

In addition, Alconox works with equal effectiveness in either hard or soft water, hot or cold—and is absolutely harmless to human tissue....

Try It—Buy It—and You'll Buy It Again.

Available in

Box of 3 lb.	— price \$1.95
Carton (12 x 3 lb.)	— ea. 18.00
Bag of 50 lb.	— lb. .40
Drum of 100 lb.	— lb. .40
Barrel of 300 lb.	— lb. .37



If your dealer cannot supply you, write for literature and samples.

Dept. CP-10



When inquiring check CP 4350 on handy form, pgs. 2-3

(Gripsheen is a product of West Disinfecting Co., Dept. CP, 42-16 West St., Long Island City 1, N. Y. . . or for more information check CP 4351 on handy form, pages 2 and 3.)

Welding made simpler with use of magnetic clamps

These clamps have many uses, but their most important function is in the welding field. They are used to locate and hold pieces of metal together for tacking and welding. Some jobs would be to hold two flats together for butt welds, one piece 90° to another for fillet welds, or two odd size pieces for lap welds. Use of clamps simplifies many welding jobs where holding pieces together is a necessary part of the operation.

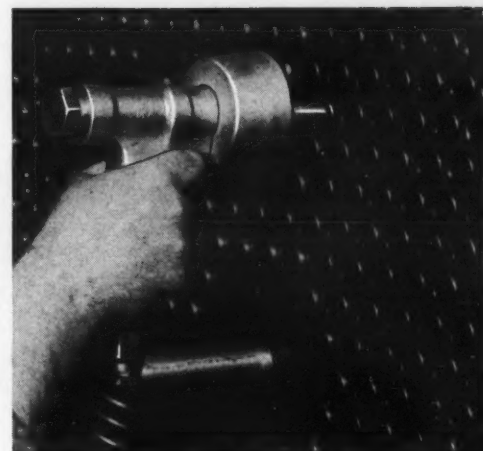
There are three models in the main line. Model MCP has a 45° at either end and a plain periphery. It is used to hold flats to flats. Model MCV is V-shaped at the ends, but plain on top and bottom. It is used to hold rounds to rounds, rounds to flats, or flats to flats. Model MCA is adjustable to any angle and consists of one set with two magnets attached with a link on either side held with a thumb screw. It is used to hold light sheet metal at any angle for tacking or welding.

Magnetic cores of clamps are made of Alcomax, and are permanent. There are no weight capacities for these models since it is said that this is not necessary information for the purpose for which they were designed.

However, there are two more models in this line that are specifically for holding and lifting heavy plate. These are Model MCR, 4" pot magnet, and Model MCQ, 3-¾" cube magnet, having capacities of 275 and 375 lb respectively with an air gap of .005". Cube magnet has facilities for attaching any number together for additional weight capacity. Both models have a hand thrust screw for lifting clamp from workpiece after use.

(Products of Aronson Machine Co., Dept. CP, Arcade, N. Y. . . or for more information check CP 4352 on handy Reader Service slip, pages 2 and 3.)

Clean condenser tubes this *fast* way!



1. Insert one of the stiff nylon brushes in a tube —
2. Shove the nozzle of the Jiffy Gun into the tube end, and push, shooting water (or air) under pressure into the tube —
3. Out comes the brush at the other end of the tube, leaving the tube clean as a whistle.

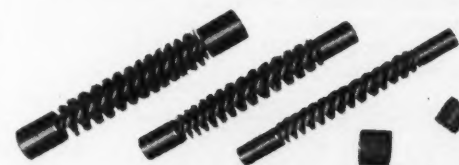


The ELLIOTT JIFFY GUN with whirling brushes

uses compressed air or water, the latter especially recommended because of its flushing action. The brushes are spirally woven and their stiff bristles scour the tube with a whirling action. They do not remove metal, cannot stick in the tube, and may be used over and over many times. In sizes for all tubes. Rubber plugs for use in place of brushes are also available.

For condensers with deep water-boxes, the gun can be lengthened with a section of pipe with standard thread interposed between gun and nozzle.

For full data get the Jiffy Gun Bulletin. Ask your local Elliott representative or write Elliott Company, Springfield, Ohio.



The brushes have rubber plugs at both ends, not quite as large as the tube diameter. This permits some of the water to get past, spin the brush, and drive loosened sludge ahead of the brush. 70 lb. water pressure suffices.

ELLIOTT Company

LAGONDA DIVISION



Y3-10

When inquiring check CP 4353 on handy form, pgs. 2-3

KOPPERS CHEMICALS

proven in the rubber industry

RESORCINOL is used for preparation of adhesives that assure a strong bond between rubber and fabric or cords. Koppers Resorcinol used in pre-dip treatment produces excellent bonding of rubber to cotton, rayon and nylon fabrics.

Di-tert-BUTYL-para-CRESOL has wide application as an antioxidant in white rubber products. It retards cracking, checking, hardening or loss of strength without discoloring the product or staining materials with which the product comes in contact.

DIVINYLBENZENE (20% and 50% grades) in synthetic rubber manufacture improves processing and decreases shrinkage of the product. With styrene and other monomers, Divinylbenzene produces insoluble and infusible copolymers.

STYRENE MONOMER can be polymerized with other active olefinic materials to produce a variety of synthetic rubbers which have various properties.



TECHNICAL BULLETINS AVAILABLE

For further information on any of the above chemicals, write for the Technical Bulletin on the chemical (s) in which you are interested. Please address: Koppers Company, Inc., Chemical Division, Dept. CP-103, Pittsburgh 19, Pennsylvania.



Koppers Chemicals

KOPPERS COMPANY, INC. • Chemical Division • Pittsburgh 19, Pennsylvania

When inquiring check CP 4354 on handy form, pgs. 2-3

CONSTRUCTION

Fire hazard eliminated by jet cleaner

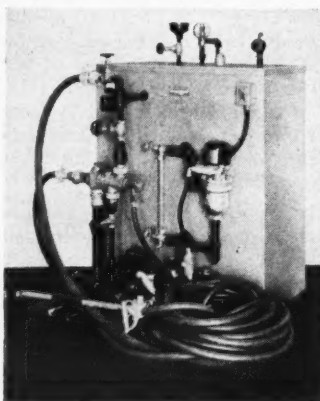
Uses: For all heavy-duty plant maintenance where a steam jet cleaner is applicable.

Features: All-electric jet cleaner is said to eliminate completely sparks, flames and fire hazards.

Description: Unit, identified as Speedylectric Hydrosteam, is available in both stationary and portable models. It is provided for operation on 220, 440 or 550 v, 3 phase or 2 phase, 60 or 25 cycle power supply.

According to manufacturer, Sellers Hydraulic unit in combination with steam generator, provides a solid jet of superheated water and detergent, propelled under extremely high discharge pressure and temperature. Cannon-like force, manually controlled, quickly removes grease deposits and soil encrustations. It reaches even inaccessible machinery parts.

For delicate parts of machines, motors and equipment that must be protected from water and excess moisture, unit provides pin-point cleaning under fingertip control of



Unit provides safe and rapid cleaning with high pressure and temperature

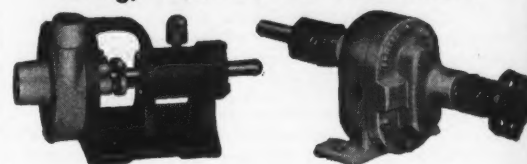
operator. Cleaner can also be effectively used for applying concentrated, undiluted solvents, detergents or stripping agents, where such chemical aids are needed to soften and loosen accumulations or coatings.

(Product of Livingstone Engineering Co., Dept. CP, 100 Grove St., Worcester 5, Mass. . . or check CP 4355, pgs. 2 & 3.)

ERTEL STAINLESS STEEL Centrifugal & Self-Priming PUMPS

with minimum of parts...

Meet requirements for handling corrosive liquids in the Drug, Chemical and Food field.



MODEL SCP CENTRIFUGAL

MODEL ESP SELF-PRIMING

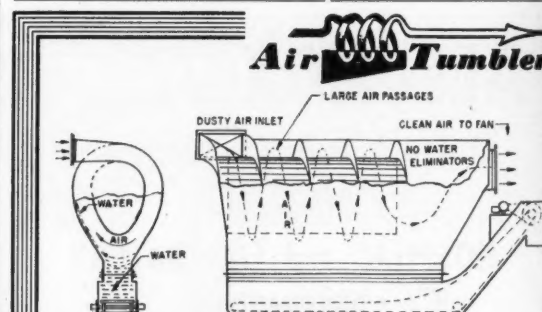
Write for fully illustrated literature

ERTEL ENGINEERING CORPORATION

KINGSTON 3, NEW YORK
Branch Office & Showroom Located in New York City
COMPLETE LINE OF
Liquid Handling Equipment



When inquiring check CP 4356 on handy form, pgs. 2-3



The Master of DUST In Industry

CONSTANT CAPACITY and sustained HIGH EFFICIENCY with a minimum of maintenance are among the most important characteristics of the AIR TUMBLER. They result from its simplicity of design and operation, which dispenses with sprays, pumps, water eliminators, rotating elements, and similar devices.

The AIR TUMBLER in a short time has found its way into every kind of industry in this country and abroad, and has become standard equipment wherever tried.

For further information write to:

DUST SUPPRESSION and ENGINEERING

P. O. Box 67 Lake Orion, Michigan

Or to any of the following Licensees:

AUSTRALIA Air-Dust Separators Co. Kipp Kelly Limited 15 O'Connell St., Sydney	CANADA Kipp Kelly Limited 68 Higgins Ave., Winnipeg	BRAZIL Cema S.A. Caixa Postal 4963, Sao Paulo
ITALY Aerotecnica Marilli Casella Postale 1217, Milano C.	SWITZERLAND Machines Electriques S.A. 59 Rue du Rhone, Geneva	

When inquiring check CP 4357 on handy form, pgs. 2-3

CHEMICAL PROCESSING

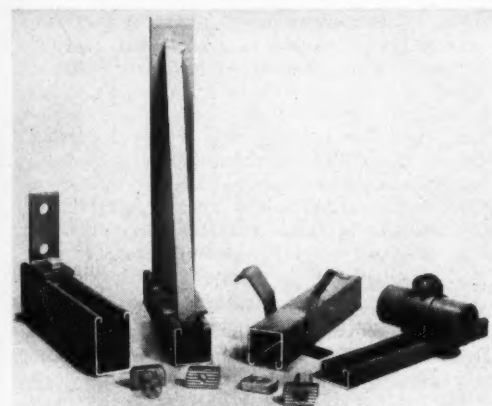
**No welding or drilling required
to install structural steel
framing member . . .**

only tools which are required for assembly are wrench and hacksaw

Uses: Steel channels, with fittings, have applications on racks, as concrete inserts, in hanging fluorescent fixtures, on switch gear frames and as cable supports.

Features: No welding or drilling is required for assembly or installation. Wrench and hacksaw are only tools used. Channel installations are said to have the strength of welded units, yet can be dismantled and reused.

Description: Channel is made of cold rolled carbon steel in four basic sizes to provide a broad range of strength adaptability. They can be furnished



Four channel sizes and a wide variety of connecting fittings are available

in many different combinations to suit specific requirements. Standard finishes are plain, green enamel or galvanized. A wide range of connecting fittings is available.

(Versabar channel is a product of M-H Standard Co., Versabar Div., Dept. CP, 515 Communipaw Ave., Jersey City 4, N. J. . . . or for more information check CP 4358 on handy form, pages 2 and 3.)

**Two bulletins list products
for plant maintenance**

Variety of products for maintaining plant floors, walls, roofs, driveways and the like are described in two product bulletins. Included are primers, resurfacers, paints, coatings, water-proofing agents, bonding agents, and other maintenance materials for many plant applications.

Bul "A Resume of Mecro Products" and "Ready Reference List of Mecro Products" are issued by Maintenance Engineering Co., Dept. CP, 16 W. Johnson St., Philadelphia 44, Pa. When inquiring specify CP 4359 on handy form, pages 2 & 3.

Save space...time...money!



with

PEABODY
Gas-Liquid Contact
EQUIPMENT

*Intimate contact between gas and liquid
results in high mass transfer rates and
efficient scrubbing action.*

Compact, efficient equipment, job-engineered to your plant and process.

A Typical Peabody Absorbing Tower:

Dimensions: 5' 6" diameter by 15' high.

Capacity: 95 gpm of neutral sulphite liquor.

Sulphurous acid and sulphite liquor may be produced in the same tower simultaneously.

*For fast, dependable and efficient solutions
to any problem involving
gas-liquid contact, look to Peabody.
Literature on request, Bulletin 203B.*

PEABODY
ENGINEERING CORPORATION

580 FIFTH AVENUE • NEW YORK 36, N. Y.
Manufacturers of all types of combustion equipment, direct-fired air heaters, gas scrubbers, coolers, and absorbers.

OFFICES IN PRINCIPAL CITIES
PEABODY LIMITED • LONDON, S.W. 1, ENGLAND

When inquiring check CP 4360 on handy form, pgs. 2-3

HORTON WATERSPHERE*

**provides
safe and sane
fire protection**

An increasing number of modern plants are using Waterspheres to provide the water they *must have* for fire protection. Install a Watersphere and get:

- Dependable Gravity Flow
- 24-Hour-a-Day Protection
- Low Maintenance Cost
- Streamlined Appearance

In addition to the above advantages, a Watersphere will often pay for itself in a short time through reduced insurance premiums. Your insurance company will give you a lower rate when there's a Watersphere and an automatic sprinkler system on the job.

The modern, streamlined Watersphere is built in standard capacities from 25,000 to 250,000 gals. Write our nearest office for further information, estimates or quotations. There is no obligation on your part.

**Trade Mark Registered in U.S. Patent Office*

CHICAGO BRIDGE & IRON COMPANY

Atlanta 3	2107 Healey Bldg.	Los Angeles 17	1536 General Petroleum Bldg.
Birmingham 1	1533 North Fifth St.	New York 6	3314-165 Broadway Bldg.
Boston 10	1007-201 Devonshire St.	Philadelphia 3	1650-1700 Walnut St., Bldg.
Chicago 4	2116 McCormick Bldg.	Pittsburgh 19	3208 Alcoa Bldg.
Cleveland 15	2212 Midland Bldg.	San Francisco 4	1545-300 Bush St.
Detroit 26	1535 Lafayette Bldg.	Seattle 1	1307 Henry Bldg.
Houston 2	2151 C & I Life Bldg.	Tulsa 3	1649 Hunt Bldg.

Plants at BIRMINGHAM, CHICAGO, SALT LAKE CITY, and GREENVILLE, PA.

When inquiring check CP 4361 on handy form, pgs. 2-3

Low contamination factor plus greater-wear-life offered in mill jar

USES: For grinding and mixing applications in the pharmaceutical and chemical industries.

Features: Laboratory and field tests are said to have shown that the design of this mill jar has reduced contamination factor from $\frac{1}{2}$ to $\frac{2}{3}$, and increased wear life from 2 to 3 times over conventional porcelain jars. Addition of Burundum to body likewise adds materially to mechanical strength* of jar — reportedly 2 to 1 over porcelain — which reduces impact and breakage hazard.

Description: Basic design of Burundum-Fortified mill jars, incorporating a simple, positive locking lid construction with an extra wide mouth opening, speeds jar loading and emptying. Lid, locking bar and



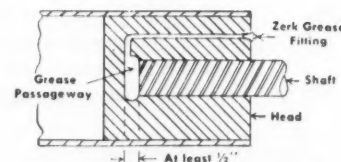
Mill jar, shown here in armored model, has mechanical impact strength of 2 to 1 over porcelain

locking hand wheel are an integral unit which makes lid removal and replacement a clean, simple, quick operation. Jars are available in six sizes ($\frac{1}{2}$ pt through 6.6 gal capacity). Neoprene oil and solvent resistant gaskets are standard.

Armored mill jars are also available with a Burundum-Fortified porcelain jar fitted and cemented in a heavy gage metal case. Unit may be used until jar itself is completely worn through. Case can then be fitted with a new jar. Armored jars are available in the one gallon size only.

(Products of The U.S. Stoneware Co., Dept. CP, 5300 Talmadge Ave., Akron 9, Ohio . . . or for more information check CP 4362 on handy form, pages 2 and 3.)

Hours saved with use of easily replaced brass rolls



Schematic shows operating principle of roll

ACCORDING to manufacturer's report, it is no longer necessary to discard a good brass roll because of the difficulty of replacing worn or broken shafts.

Renu-Shaft rolls have a press-fitted shaft in the roll head. At base of shaft is a well which is connected to face of head by a right-angle channel sealed with a Zerk grease-fitting. With the fitting open, and

shaft hole filled with grease, shaft is driven to within $\frac{1}{2}$ " of full depth. Fitting is then closed.

If it becomes necessary to replace shaft, a hand grease gun or similar equipment of 10,000 psi capacity is applied to fitting. Pressure of several tons is created on back end of shaft, causing steady removal of shaft from roll body. Unit is said to reduce to a few minutes a job which formerly took as long as several hours.

(Product of Rodney Hunt Machine Co., Dept. CP, 32 Vale St., Orange, Mass. . . . or for more information on manufacturer's product reader may simply check CP 4363 on convenient Reader Service slip located between pages two and three.)

Army, Navy, Air specs met by toggle switches

Two-page data sheet describes two series of toggle switches that conform to AN (Army-Navy Aeronautical) and JAN (Joint Army-Navy) specifications. Switches, in addition to meeting specifications, have riveted solid silver contacts to prevent loosening and provide maximum conductivity and heat dissipation, and copper moving contact carrier for maximum conductivity and minimum temperature rise. Momentary versions are built without return springs, eliminating a source of early failure.

One of the series, IITS, consists of nine single-pole toggle switches with either maintained or momentary contact position variations. Switches are bushing-mounted and fittings for mounting are included with each switch. This series has sealed toggle lever to prevent foreign matter from entering switch case through toggle bushing. Either screw or solder type terminals may be supplied in all but one of the nine switches.

AN and JAN ratings for IITS series are: on maintained contact versions, 20 amperes resistive load at 30 volts DC, 15 amperes resistive load at 125 volts AC; and on momentary contact version, 15 amperes resistive load at 30 volts DC, and 125 volts AC.

Other series, 31TS, includes eight three-hold mounting type single-pole toggle switches with either maintained or momentary contact position. Although placement and diameters of mounting poles confirm to AN specifications, switch body is smaller and lighter in weight than maximum specified. Switches are sealed at ball of bat handle.

AN and JAN ratings for this series are: on maintained contact versions, 40 amperes resistive load at 30 volts DC, 20 amperes resistive load at 115 volts AC; and on momentary contact versions, 30 amperes resistive load at 30 volts DC, 20 amperes resistive load at 115 volts AC.

Data sheet 70a is issued by Minneapolis-Honeywell Regulator Co., Micro Div., Dept. CP, Freeport, Illinois. When inquiring reader may simply specify CP 4364 on the convenient Reader Service slip located between pages two and three.



Outstanding

**FOR CORROSION RESISTANCE AND
STABLE FATTY ACID PRODUCTION**

**... Inconel-lined fat-splitting tower at Swift & Company's
Technical Products plant, Hammond, Indiana**

Design engineers at Swift & Co., wanted two things from their new fat-splitting tower in Hammond, Indiana. And both required a corrosion-resisting construction material.

First, they wanted light colored fatty acids with good color and oxidation stability.

Secondly, they wanted a tower that would successfully stand up against the severe conditions of temperature, pressure and corrosives involved.

That's why the engineers lined their tower with Inconel®.

Inconel is resistant to the highly corrosive fat-splitting process. It withstands the high temperature (500°F.) and pressures (700 psi.) required for efficient operation.

And since the expansion coefficient of Inconel is very close to that of steel, Inconel lends itself well to lined and clad construction. Since its corrosion resistance is not impaired by welding, no subsequent heat treatment is necessary.

All in all, Inconel proves itself ideal for fat-splitting tower applications.

Swift's 70-ft.-high Inconel-lined tower has been producing material with average acid number of 197...with efficiencies about 99% for the past three years. Despite the severe conditions of temperature, pressure and corrosives, no significant corrosion of the Inconel lining has been observed.

Inconel, Monel® and Nickel equipment have excellent service records in the manufacture, distillation, storage and handling of fatty acids and in their subsequent utilization.

Perhaps Inconel — or one of the other Nickel Alloys offers the solution to your corrosion or product purity maintenance problems. Write for additional information. Address:

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

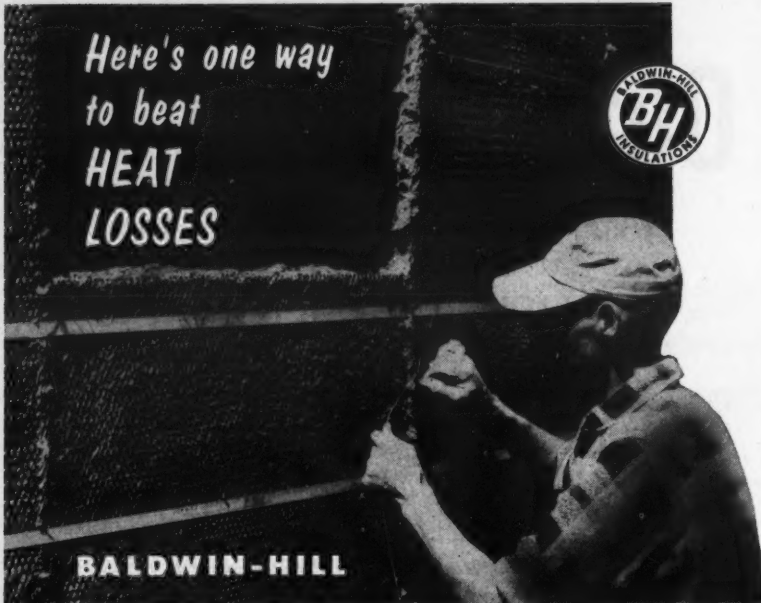
It is advisable to place equipment orders with your suppliers well in advance of scheduled use. Distributors of Inco Nickel Alloys can supply the latest information on availability from warehouse and mill.



When inquiring check CP 4365 on handy form, pgs. 2-3

You find the solution to many problems in **CHEMICAL PROCESSING**

*Here's one way
to beat
HEAT
LOSSES*



BALDWIN-HILL

BLANKETS

When you lose heat, you lose operating efficiency and, what's more, those escaping Btu waste your money. Investigate the savings you can make with B-H rockwool BLANKETS. Effective up to 1200° F., they provide exceptional insulating efficiency. High temperature-resisting B-H rockwool is felted in large sheets between various types of metal fabrics to form blankets which are easily applied to large equipment. The soft fiber edges of one blanket merge with the edges of adjoining blankets to form an unbroken layer of insulation. Step up operating efficiency... save fuel... insulate with B-H BLANKETS. For the correct type and method of application best suited to your job, call on B-H Engineered Insulation Service.



Baldwin-Hill

Clip on signed letterhead and mail

TEAR
OUT

BALDWIN-HILL COMPANY, 410 Breunig Ave., Trenton 2, N. J.

Please send complete information on

- ☐ BLANKETS... Metal-reinforced, flexible, felted, rockwool insulation
- ☐ NO. 1 INSULATING CEMENT... All-purpose, rust-inhibiting, plastic cement
- ☐ MONO-BLOCK... Rigid, felted, rockwool block—for high and low temperature use
- ☐ POWERHOUSE CEMENT... High adhesion, rockwool, insulating-finishing cement

When inquiring check CP 4366 on handy form, pgs. 2-3

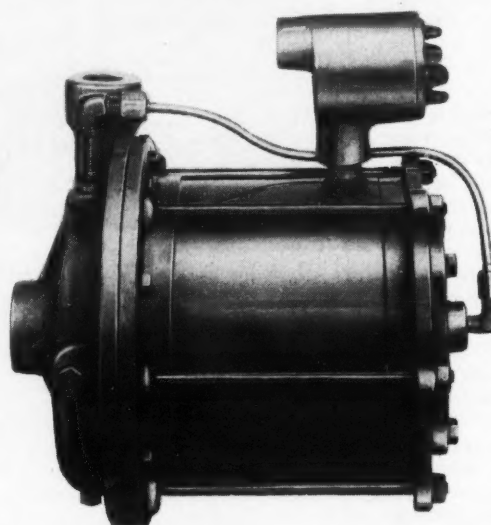
CONSTRUCTION & MAINTENANCE

**Maintenance practically eliminated
by seal-less, leakproof
centrifugal pump**

Uses: This fractional hp unit is especially well suited for handling corrosive, radioactive, and highly volatile materials, and for processes where vacuum is used.

Features: Pump is totally enclosed from atmosphere. It is said to be seal-less and leakproof. This design practically eliminates maintenance and operating difficulties inherent in mechanical seals and stuffing boxes.

Description: Pump is available in a wide variety of materials. Basic principle of design permits fluid



Well suited for handling corrosive, radioactive, or highly volatile fluids

being pumped to enter part of the motor. Stator and its windings are isolated from fluid by a corrosion resistant, non-magnetic alloy cylinder inserted in the air gap. Rotor is hermetically sealed with same alloy.

(Product of Station D, Chempump Corp., Dept. CP, 1300 E. Mermaid Lane, Philadelphia 18, Pa. . . . or for more information check CP 4367 on handy form, pages 2 and 3.)

Hot water heating information

Sixteen-page catalog features convenient and simple circulator performance curves, heater selection charts and complete information on company's heating specialties including hot water heaters, heat exchangers, circulators and valves.

Cat H-99 is available from Taco Heaters, Inc., Dept. CP, 137 South St., Providence, R. I. When inquiring specify CP 4368 on handy form, pages 2 and 3.

for *Low*
**VACUUM PUMP
MAINTENANCE
COSTS and BETTER
VACUUM...**

It's the

HILCO OIL RECLAIMER

**VACUUM
for PUMP
USERS..**



A simple, economical and efficient method of restoring contaminated lubricating and sealing oil to the full value of NEW OIL. The HILCO will produce and maintain oil free of solids, gums, water and gases in a continuous, all-electric, automatic operation.

Be SURE of clean oil in your
HIGH VACUUM PUMPS

**HILCO
OIL RECLAIMER
SYSTEMS..**

• WRITE FOR COMPLETE DETAILS
IN THE FREE BULLETIN

Recommendations at no Obligations

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CORPORATION
PURIFIER DIVISION**

58 W. Fourth St., Elmira, N. Y.

IN CANADA — UPTON - BRADEN - JAMES, Ltd.
990 Bay St., Toronto. 3404 Park Ave., Montreal

When inquiring check CP 4369
on handy form, pgs. 2-3

CHEMICAL PROCESSING

EVERY ARTICLE IN CHEMICAL PROCESSING IS "STAFF WRITTEN"

Every article in **CHEMICAL PROCESSING** is terse, brief, to-the-point . . . yet packed with essential facts of developments important to every man in chemical processing.

For every article is "Staff Written." Our Editors dig out the vital news-facts, then write them in the fewest possible words. That's why you read so much . . . keep up with developments . . . in short reading time. You don't have to "wade through" long, hard-to-read articles.

That's why you don't find these articles signed . . . every one is "Staff Written." It's the most difficult kind of editing, but it pays big dividends to every busy reader.

Do you work with ACIDS AND CHEMICALS? NOW SAVE UP TO 80% on



*Du Pont Orlon
acrylic fiber

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Industrial Apparel of acid
and chemical resistant

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or Union Carbide
DYNEL

- ★ ACID, CHEMICAL
AND ABRASION RESISTANT!
- ★ U.S. NAVY SAYS:
OUTWEARS COTTON 50 TO 1
- ★ LAUNDERS AND DRIES
QUICKLY — NO IRONING!

SAVE
MONEY!
SEND FOR
OUR BIG
FREE 1954
CATALOG!

WORKLON, INC. Dept. CP10, 253 West 28th St., New York 1
FREE! Rush WORKLON's new, fully illustrated catalog of
ORLON, DYNEL, and COTTON WORK CLOTHES.

Firm Name.....
Address.....
City..... State.....
Attention of..... Dept.....

When inquiring check CP 4370 on handy form, pgs. 2-3

OCTOBER, 1953

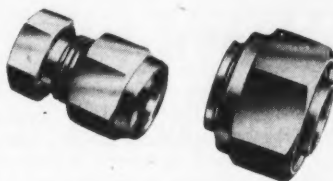
CONSTRUCTION

**Additions to tube fitting
line include caps
and plugs . . .**

furnished completely assembled

Uses: Cap, shown at left in illustration, is for capping end of tube. Plug, on right is for plugging unused port of fitting.

Features: Both cap and plug come completely assembled, finger-



Available in a variety of sizes and materials

tight, and require only one and one-quarter turns of a wrench to provide a torque-free seal.

Description: Caps and plugs are available in a wide variety of sizes from 1/8" up in brass, aluminum, stainless steel, and Monel.

(Swagelok fittings are products of Crawford Fitting Co., Dept. CP, 884 E. 140th St., Cleveland 10, Ohio . . . or for more information check CP 4371 on handy form, pages 2 and 3.)

Low cost floor resurfacing

Two-color brochure describing low-cost mastic floor resurfacing explains in detail all necessary proportions for mixing, along with ingredients specified for certain jobs. Featured in bulletin are the low cost advantages of such materials plus suggested uses.

Materials are used as both a new surfacing over old concrete or wood floors as well as an underlayment for leveling floors prior to application of tile or linoleum. Material is claimed to withstand heavy loads inside or out.

A.I.A. File 23-D is issued by United Laboratories, Inc., Dept. CP, 16801 Euclid Ave., Cleveland 12, Ohio. When inquiring specify CP 4372 on handy form, pages 2 and 3.

No correctly installed HEXTEEL® or FLOORSTEEL® floor surface ...HAS EVER WORN OUT!



That's why more than 250
nationally famous firms use
KLEMP

HEXTEEL®

HEAVY-DUTY SURFACE ARMOR AND
FLOORSTEEL® FLEXIBLE FLOORING

The crashing impacts of multi-ton loads—the deadly corrosive action of wet chemicals—the no less deadly wear of time—all have failed to daunt the floor correctly reinforced with Klemm HEXTEEL® or FLOORSTEEL®. For new floors—for repairing or resurfacing old floors over wood, concrete or asphalt. Get cost-cutting facts TODAY!

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Automotive	Meat Packing
Brewing	Paper
Chemical	Petroleum
Dairy	Railroad
Drugs	Rubber
Flooring	Shipping
Food Processing	Soap
Manufacturing	

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KLEMP METAL GRATING CORPORATION

1371 NORTH BRANCH STREET, CHICAGO 22, ILL.
Plants and Warehouses at Chicago, Illinois and Houston, Texas

For more than 40 years, manufacturers of Diamond Riveted and Welded gratings and stair treads, Hexteel® and Floorsteel®

MAIL COUPON OR TELEPHONE NOW!
Let the specialized Klemm engineer know your problem, give you complete information on HEXTEEL® and FLOORSTEEL®. Write today. If you have an immediate problem phone Klemm (collect) NOW. No obligation!

Chicago, Ill.  **8-8841**

Klemm Metal Grating Corporation
1371 North Branch Street
Chicago 22, Illinois

Please send me information about Hexteel® and Floorsteel® as used by more than 250 famous industrial and commercial firms.

NAME.....
ADDRESS.....
CITY..... STATE..... (CP-10)

When inquiring check CP 4373 on handy form, pgs. 2-3

NOW!

12-FOOT TUBES

of IMPERVITE

Impervious Graphite!



and
FALLS
is **FIRST**
AGAIN, with

heat exchangers that
give you 33 1/3% more surface
for **ONLY 15% added cost!**

Have you received
your copy of the
complete Impervite
Catalog?

BECAUSE Falls Impervite (Impervious Graphite) pipe is made in our own associate plant, and
BECAUSE this modern plant was carefully planned with the future of the processing industry in mind, and
BECAUSE since production started last year its engineers have perfected their development of super-length graphite extrusions . . .

THEREFORE, this company takes considerable pride in being the first to supply a long-felt need in this industry . . . 12-foot Impervite (impervious graphite) tubes, making possible the production of heat exchangers having obvious advantages over the former maximum standard lengths.

Falls Industries, Inc.

AURORA ROAD SOLON, OHIO

When inquiring check CP 4374 on handy form, pgs. 2-3

CONSTRUCTION

**Small cabinet stores
tiny parts safely,
conveniently**

Uses: For small parts storage in industrial plants, work shops, garages, or offices.

Features: The cabinet is small enough to fit in one sq ft of space, so it can be conveniently placed on a bench, desk, or in stockroom. Parts cannot spill out when drawer is pulled completely open — there is no tipping; so parts are safe from damage.

Description: Cabinet consists of two 1 1/2" high drawers in a rugged one-piece, all-steel welded frame, having an overall size of 3 1/4 x 11 x 11". Each drawer is furnished with 8 dividers, giving the cabinet a total of 24 adjustable compartments. Adding extra dividers makes possible a total of 56 compartments per unit. Any number of units may be stacked in one solid assembly. Cabinets come in a baked green finish. They are designed for insertion in company's all-steel Standard Parts Cabinets.

("Little Gem" Tiny Parts Cabinets are products of Precision Equipment Co., Dept. CP, 3714 N. Milwaukee Ave., Chicago 41, Ill. . . . or for more information check CP 4375 on handy form, pages 2 & 3).

Summary of Information on motors & generators

Detailed information on performance, dimensional data, construction advantages, and installation photographs have been summarized in 12 pages as a handy guide for designers, maintenance men, and purchasing agents.

Product application information has been simplified into easy-to-read charts to aid in selection of units for ordinary applications of polyphase squirrel-cage induction motors. Also, a page is devoted to electrical and mechanical modifications that are available for particular installation needs.

Brochure 100 is issued by Electro Dynamic Div., General Dynamics Corp., Dept. CP, Avenue A and North St., Bayonne, N. J. When inquiring specify CP 4376, pages 2 and 3.

**USE THIS NEW SAFETY MATERIAL
ALL OVER
YOUR
PLANT**

Work platforms



Flooring



Catwalks



Partitions



Safety

GRIP-STRUT

NON-SKID—RUGGED—LOW COST

Safety Grip-Strut is a new basic material. All one piece, steel or aluminum, in various sizes and gauges. Sold like lumber, used like lumber and stocked in your storeroom like lumber. Ideal for on-the-job fabricating. Not welded, riveted or expanded. It presents an open space, in a diamond shaped pattern, in excess of 75% of the area for ready access of light and air and gives a positive NON-SKID footing in all directions. Ideal for stair treads, fire escapes, cable trays, work platforms, catwalks, flooring and for original equipment safety treads. Your own mechanics can install it—it's inexpensive, yet permanent and safe.

Write today for new catalog showing loadings and methods of easy application in your plant.

Distributors in all principal cities.

GRIP-STRUT division

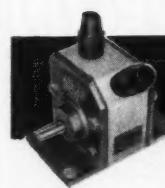
THE GLOBE COMPANY

Manufacturers since 1914

4006 S. Princeton Ave. • Chicago 9, Ill.

When inquiring check CP 4377 on handy form, pgs. 2-3

**VANTON
PUMP
TAMES
CORROSIVE
CHEMICALS**



**POLYETHYLENE
flex-i-liner PUMPS**

are designed to handle the toughest corrosive chemicals and abrasive slurries.

The durable precision molded flexible liner and the pump body block are the only parts contacting the fluid.

No stuffing boxes, shaft seals, check valves, glands or gaskets to worry about.

Body blocks in: Polyethylene, Bakelite, Buna N Hard Rubber, unplasticized PVC, Stainless Steel. Flexible liners in: Natural and pure gum rubber, Neoprene, Hycar, Buna N, Vinyl, Compac and Silicone. The wide choice of materials means trouble free, corrosion free service.

Pump capacities from fractional to 20 gpm. Illustrated booklet on request, as well as descriptive literature on complete line of corrosion resistant centrifugal pumps, valves, pipe and fittings.



VANTON

PUMP & EQUIPMENT CORP.

EMPIRE STATE BLDG. NEW YORK 1, N. Y.

When inquiring check CP 4378 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Temperatures to 5000°F withstood
by metal surface treated with
quick-drying material . . .**

one-sixteenth inch coating of insulation guards
for 10 sec against over-melting-point temps

Uses: Although just out of the testing stage, it is said that material can be modified for use anywhere where resistance to flame and high temperature is needed. Further modification for broader use in industry reportedly would provide for adhesion to many types of surfaces, plus withstanding effects of water acids, alcohol and weather.

Features: Quick-drying material that can be sprayed like paint on metal, makes treated surface capable of withstanding temperatures as high as 5000°F. It is reported that a one-sixteenth inch coating of this insulation will protect metal for as long as 10 sec against flame temperatures hotter than the melting point of metals.

Accompanying photograph illustrates a test in which the untreated steel panel at right burned through in less than a second under an oxy-acetylene flame at approximately 5000°F. As picture was taken, treated panel at left was still unharmed after 4½ seconds exposure to the same flame.

Description: Called Pyrolock, this water-base, inorganic material is non-toxic, non-flammable, non-explosive, and will adhere directly to clean metal surfaces without sandblasting or use of priming preparations. Dried layer of material bonds itself to metal with a strength that withstands sharp impact short of actual deformation of base metal. Resistant to most solvents and chemicals, material also withstands indefinitely temperature cycles of minus 60°F to plus 165°F.



Sprayed-on insulation resists even cutting torch temps for brief periods

(Pyrolock is a product of Industrial Products Div., B.F. Goodrich Rubber Co., Dept. CP, 448 S. Main St., Akron, Ohio . . . or for more information check CP 4379 on handy form, pages 2 and 3.)

Catalogs power transmission and conveying equipment

Catalog contains 56 pages on cast and steel chain, cast tooth sprockets, belt conveyor idlers, spray nozzles, and other related power transmission and conveying equipment. Drawings, charts, and tables accompany text on each part described.

Bul 53-110 is available from Dept. PR, Chain Belt Co., Dept. CP, 4701 W. Greenfield Ave., Milwaukee 1, Wis. When inquiring specify CP 4380 on handy form, pages 2 and 3.

Chlorine is Tamer with these CRANE Valves

**... Designed to handle
water-free chlorine, gas
or liquid, up to 300°F.**

Your best valves for handling chlorine are those made expressly for this service. It's too tough for ordinary equipment.

Rugged Construction

You'll operate more safely, efficiently, and dependably with these Crane Chlorine Valves. Their rugged forged steel construction gives you protection against internal and external shock. You'll have freedom from bonnet joint leakage with their strong Crane bolted design.

Effective Corrosion Resistance

You'll be equipped for highest resistance to corrosion with the Hastelloy "C" disc and seat rings, and the Monel stem. A corrugated soft Monel gasket prevents corrosion and leakage at the bonnet joint.

Literature Free on Request

The many refinements of Crane Chlorine Valves assure not only more efficient chlorine control, but important savings on valve maintenance and replacement costs. Get the complete facts in Circular AD-1608. Write or ask your Crane Representative for a copy.

The Complete Crane Line Meets All Valve Needs. That's Why

More Crane Valves Are Used Than Any Other Make!

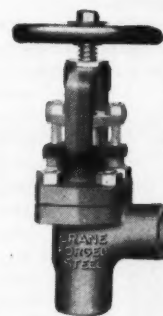
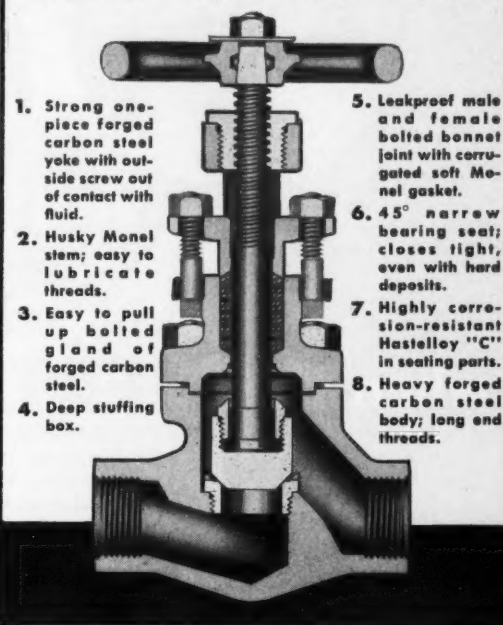
CRANE VALVES

CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Illinois
Branches and Wholesalers Serving All Industrial Areas

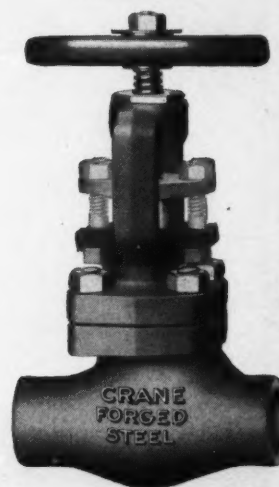
VALVES • FITTINGS • PIPE • PLUMBING • HEATING

When inquiring check CP 4381 on handy form, pgs. 2-3

EVERY FEATURE WORKS FOR YOU



No. 1645
Angle
Sizes
½ to 2 in.



No. 1644 Globe
Sizes ½ to 2 in.

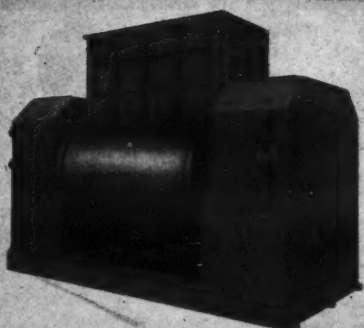
when the **HEAT'S** on...

for increased production involving heat transfer, the Readco Double-Arm Jacketed Mixer offers definite advantages.

Its unique bowl design provides a greater ratio of heated surface to the volume of mix. Close clearances between the mixer arms and shell eliminate build-up of materials, permitting increased heat transfer efficiency.

Overlapping sigma arm mixing action exposes new surfaces and breaks down the entire mass with each rotation, producing a homogeneous mix in a short mixing cycle and eliminating peak loads.

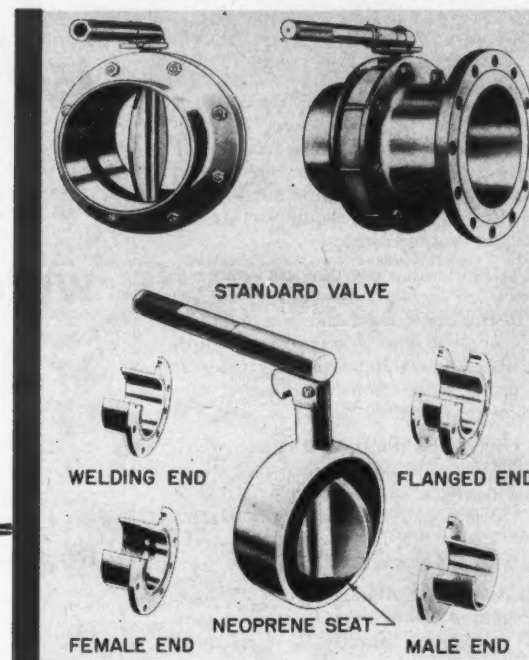
The flush-plug discharge gate prevents accumulation of dead volume. It can be supplied for manual, hydraulic or pneumatic operation.



Bakery-Chemical Division
YORK, PENNSYLVANIA
LOS ANGELES 39, CALIFORNIA

READ STANDARD
CORPORATION

When inquiring check CP 4382 on handy form, pgs. 2-3



Standard valve unit and interchangeable end fittings

Resilient seat in butterfly valve permits many vacuum and low pressure applications

Particularly effective where suspended solids are encountered

USES: Wherever positive, trouble-free control of vacuum or low pressures is desired, and especially where solids are encountered. Valves were first introduced in petroleum industry, but characteristics make them useful for numerous applications in chemical, cement, rubber, paper, and other fields.

Features: Key to valve's versatility is its Neoprene seat. Only with a resilient sealing element could complete shut-off against pressure or vacuum be assured, especially where sand or other solids are present in the stream. A resilient seal ring exerts positive pressure against butterfly disc when valve is closed. It is not subject to scoring by abrasive particles. If a bit of

solid is caught between disc and seat, a resilient seat can deform around it and still maintain a tight seal.

Description: Neoprene, a product of E. I. du Pont de Nemours and Co., is used for seat because it, of various rubbers tested, proved resistant to the greatest number of chemicals and oils that might flow through the line; it also exhibited high strength and abrasion resistance — important factors where contact with slurries is involved. In addition, it has low compression set, which assures good sealing over long periods of service.

Replaceable seat is firmly held inside a specially constructed ring that supports both ends of stem. Corrosion and leaks are pre-

vented by a bronze bushing and a gasket seal at top of stem where it projects through ring casting. Disc can also be made of aluminum bronze or manganese bronze to resist corrosion.

Flanged end fittings are bolted together across contained rubber seat and outer ring support. This permits easy removal of valve for inspection or repair without breaking the line. Valve handle is spring-loaded and locks securely in open and closed positions.

Each size valve has a full hole opening and is self-cleaning. Disc is designed so that, in the open position, there is full line flow with practically no resistance or turbulence. Construction is such that no grease is needed for ease of operation.

Among advantages offered by valves is flexibility of installation. They can be mounted between standard flanges, and are available with various end fittings having screw ends (male or female), welding ends, or flanged ends. Any combination — such as one standard flange and one welding end — can be furnished to suit requirements. This choice of interchangeable end connections permits quick, low-cost conversion in the field. Special flanges and lengths can be made to order.

Another advantage is light weight. Basic four-inch valve weighs a scant 13 lb; complete with end connections, it weighs only 21 to 34 lb, depending on type of fitting used. Valves are designed for operating pressures up to 150 psi, and are made in a complete range of sizes from 2 to 12 inches.

(Butterfly valves using Neoprene seat are products of Keystone Tool Corp., Dept. CP, P.O. Box 6716, Houston 5, Tex. . . . or for more information check CP 4383 on handy form, pages 2 and 3.)

Shows 23 designs of welded, all-steel motor-generators

Motor-generators from $\frac{3}{4}$ to 1500 kw are described in six-page bulletin. Illustrated are 23 designs of AC to DC, AC to AC, DC to DC, and DC to AC units. Electrical specifications and application of each design are given. Bul 30-200 is issued by The Electric Products Co., Dept. CP, 1725 Clarkstone Rd., Cleveland 12, Ohio. When inquiring specify CP 4384, pages 2 and 3.

Photos show fabrications of stainless metal

Examples of stainless metal fabrications made by company are illustrated in 8-page bulletin. Included are insulated trucks, tanks of various types and sizes, hydronic inlets for paper-making machines, tables and benches, and Save-all trays and troughs. "Van—Stainless Metal Fabricators" is issued by The John Van Range Company, Dept. CP, Fifth and Butler Sts., Cincinnati 2, Ohio. When inquiring specify CP 4385, pages 2 & 3.



what can you do
with this amazing,
new, natural colloid?

- **JAGUAR** produces high viscosity at low concentrations
- **JAGUAR** is cold water swelling
- **JAGUAR** develops its properties over a wide pH range
- **JAGUAR** has excellent thickening, film forming and stabilizing properties
- **JAGUAR** is a natural vegetable pure food colloid
- **JAGUAR** is economical to use
- **JAGUAR** is available in commercial quantities

We invite your inquiry regarding this amazing, new product, developed and produced by Stein Hall. For technical data, and sample, write us on your company letterhead or fill in this coupon.

JAGUAR*

is

STEIN  **HALL**
GUAR GUM

*Trademark

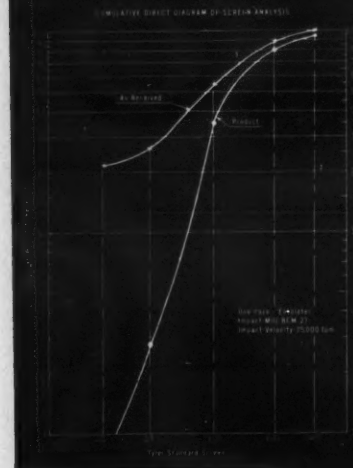
JAGUAR DEPT. CP-10
Stein, Hall & Co., Inc., 285 Madison Avenue, New York 17, N.Y.

Please send me at once your descriptive booklet together with a free sample of STEIN HALL'S JAGUAR. I understand that no obligation is incurred.

Name _____
Title _____
Company _____
Address _____
City _____ Zone _____ State _____

When inquiring check CP 4386 on handy form, pgs. 2-3

WANTLE SIZE REDUCTION BY IMPACT!



Typical particle size curves . . . before and after processing material on the "ENTOLETER" Impact Mill

Belt Drive "ENTOLETER" Impact Mill equipped with 25 HP motor

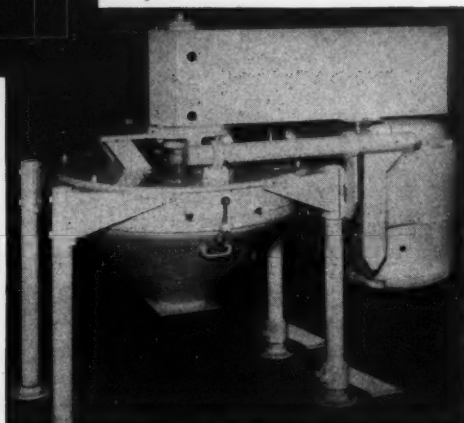
High Productivity Rates per HP expended

Narrow Particle Size Range . . . reduces quantity of "super fines"

Minimum Product Heating . . . refrigeration rarely required

High Impact Velocities . . . to 25,000 feet per minute dependent on application

Capacity . . . up to 10,000 pounds per hour or higher on friable materials



COMPACT . . .

a unit processing over 4 tons per hour occupies less than 14 square feet

SIMPLIFIED MAINTENANCE . . .

the single rotor and impact segments are readily removable for replacement

LABORATORY RESEARCH and DEVELOPMENT . . .

Possibilities for new "ENTOLETER" Impact Mill applications are being worked on continually in our laboratory in New Haven. We shall be glad to process samples and return them to you for your evaluation.

The trademark "ENTOLETER" is your guarantee of complete satisfaction.

ENTOLETER DIVISION

The Safety Car Heating and Lighting Company, Inc.
1197 DIXWELL AVE., NEW HAVEN 4, CONN.

When inquiring check CP 4387 on handy form, pgs. 2-3

CONSTRUCTION & MAINTENANCE

500 kw portable power plant is no larger than a house trailer

This 500 kilowatt portable power plant which is no larger than a house trailer is designed to serve as a source of emergency power; or, in industry, for installations requiring large amounts of electricity not available from usual high-line sources. A standard fifth wheel coupling makes it possible to tow this entire unit with any heavy-duty truck tractor.

A completely automatic control system obviates the need for an attendant or engineer to regulate this unit. It can be operated by remote control, either by wire or by radio from any reasonable distance. It has been designed virtually to eliminate need for servicing, and usually when servicing is necessary, any competent garage mechanic can make the required adjustments.

(Product of Fischer & Associates, Dept. CP, 5209 Euclid Ave., Cleveland 3, Ohio . . . or for more information reader may simply check CP 4388 on the convenient Reader Service slip located between pages two and three.)

Saves time and labor required to insert new shear pins in machine drives . . .

slip-type friction clutch provides protection

Uses: As overload protection device in power drives of industrial machinery including conveyors, materials handling equipment, packaging machinery, and other related types of equipment where torque capacity of drive does not exceed 260 ft-lb.

Features: This compact slip-type friction clutch acts as an automatic shear pin mechanism and avoids the time and labor required to insert new shear pins. Overload setting can be readily determined without mutilating a component. Clutch is tamper-proof in that the maximum setting cannot be exceeded.

Description: Torque-limiting clutch consists of a steel body, two steel clutch plates, two friction discs, a Belleville clutch spring, and a cast iron adjusting nut. Rotating member is held between friction disc through spring pressure exerted on clutch plates that slide on splines on the hub. Torque setting of clutch is obtained by adjusting spring tension with threaded thumb nut.

Clutch is mounted on driveshaft with a standard keyway and setscrew arrangement. It is easily disassembled by removing adjusting nut, which permits springs, clutch plates, friction material, and rotating member to be slid off over hub.

In operation, rotating member on clutch breaks away from disc at overload torque setting. Then rotating member remains stationary in relation to clutch hub with friction torque of clutch remaining at from 1/3 to 1/2 the overload setting. Thus clutch rotating member is rendered inoperative until drive is shut off and overload condition corrected.

Clutches are made in 4 1/2, 5 1/2, and 6 1/2" diameter sizes with ratings of 55, 121.5, and 260 ft-lb re-



**Have you
changed
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● If so, you'll want to insure that your copy of **CHEMICAL PROCESSING** reaches you without interruption. Just send us your new address . . . use the handy form below.

Please answer all questions in regard to your new affiliation, and in addition give us your former address including company, city and state.

**mail this request to
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CHEMICAL PROCESSING**

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Chicago 11, Illinois**

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Main Product

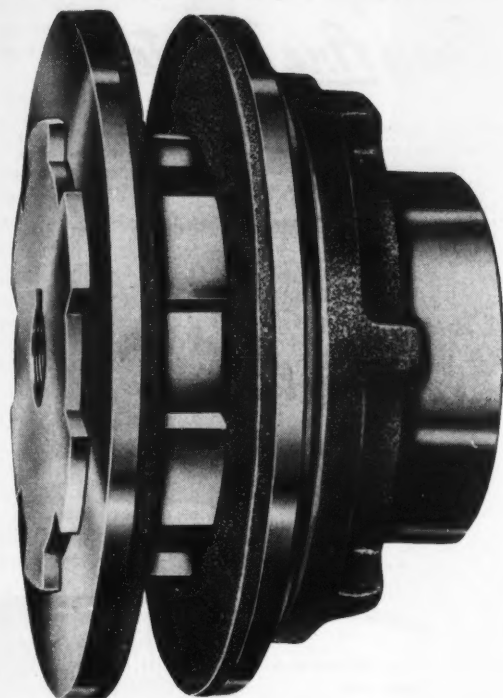
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Rating of Company

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Street Address

.....
City Zone No. State



CHEMICAL PROCESSING



Maximum setting cannot be exceeded on tamper-proof clutch

spectively. Maximum bores (with standard keyways) are 1, 1½, and 2½". Overall lengths are 2-9/16, 3, and 3-7/8". Hub OD's are 2.000, 2.625, and 4.250".

The 4½" clutch will accommodate company's standard 1½, 5/8, and 3/4" pitch Type A roller chain sprockets. The 5½" clutch will handle these sprockets as well as 1" pitch sprockets. The 6½" clutch will take 1½, 5/8, 3/4, and 1¼" pitch sprockets.

(Product of Morse Chain Co., Dept. CP, 7601 Central Ave., Detroit 10, Mich. . . or for more information check CP 4389 on handy Reader Service slip, pages 2 and 3.)

Air, water, gas, oil, chemicals handled by couplers

Bulletin features 8 pages of specifications and photographs of quick connect-disconnect couplers. They will handle air, water, gas, oil, and most chemicals. Couplers are furnished in many types of metal and may be provided with special protective finishes.

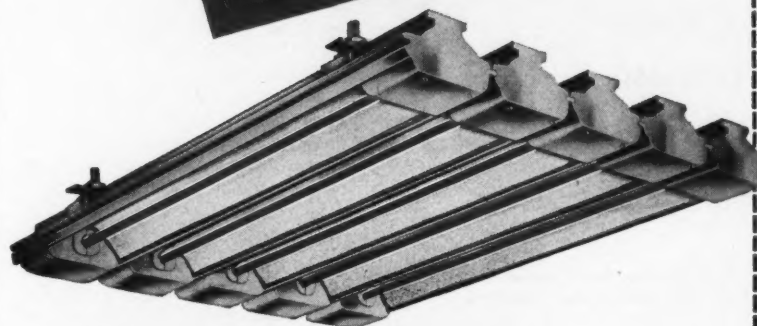
Tables present size, length, diameter, pressures in psi, and weights of several couplers. Parts and adaptors are also discussed.

Cat VP 83 is available from Snap-Tite, Inc., Dept. CP, 201 Titusville Rd., Union City, Pa. When inquiring specify CP 4390 on handy form, pages 2 and 3.

CHROMALOX gives you the LOW COST answer

for

non-breakable



CHROMALOX

all-metal electric radiant heaters

Get all the advantages of infrared heat and more—at a fraction of former costs with the new and improved CHROMALOX heating principle. All-metal construction, high heat intensity, infrared radiation that's "color blind" and heat that's infinitely variable, have proved CHROMALOX Radiant Heaters superior for over 300 different uses in more than 1500 plants. If you use heat for baking, drying, preheating, curing, degreasing and similar applications, CHROMALOX Radiant Heaters can very likely give more satisfactory results. See for yourself how these infrared units up output, improve uniformity, reduce costs.

CHROMALOX

Electric Heat for Modern Industry

Time, money and material saving applications

FOR MORE INFORMATION
CHECK, CLIP AND MAIL COUPON

PLASTICS

- ☐ Drying powders
- ☐ Drying Cellophane
- ☐ Preheating strips
- ☐ Preheating cloth
- ☐ Curing vinyl
- ☐ Post-forming
- ☐ Curing tubing

FOOD

- ☐ Warming
- ☐ Drying baking pans
- ☐ Dehydrating crackers
- ☐ Baking biscuits
- ☐ Dehydrating coconuts

TEXTILES

- ☐ Dehydrating braided material
- ☐ Drying Nylon thread
- ☐ Dehydrating woolen cloth
- ☐ Setting flock

RUBBER

- ☐ Curing
- ☐ Heating rubber glue
- ☐ Curing latex

GLASS

- ☐ Drying bottles
- ☐ Heating safety glass
- ☐ Setting dye on glass cloth
- ☐ Preheating lenses
- ☐ Drying mirrors

PRINTING

- ☐ Ink drying
- ☐ Static elimination
- ☐ Glue drying
- ☐ Drying varnished paper
- ☐ Silk screen drying

CERAMICS

- ☐ Drying frit
- ☐ Drying glaze
- ☐ Drying pottery

ELECTRICAL

- ☐ Baking armatures
- ☐ Drying marine equipment
- ☐ Sealing headlights and television tubes
- ☐ Drying varnished wire
- ☐ Drying carbon resistors
- ☐ Drying color coding

MISCELLANEOUS

- ☐ Sealing storage batteries
- ☐ Setting adhesives and cements
- ☐ Curing tobacco
- ☐ Melting wax
- ☐ Drying photographic negatives and prints
- ☐ Dehydrating kraft paper

FOUNDRIES

- ☐ Drying sand cores
- ☐ Skin drying of molds
- ☐ Comfort heating

and many other Applications

EDWIN L. WIEGAND CO., Radiant Heater Division
7517 Thomas Blvd. Pittsburgh 8, Pa.

I am interested in Infrared heat for _____

- ☐ Send me application file on uses I have listed.
- ☐ Ask factory representative to contact me.
- ☐ Send Chromalox Catalog on Industrial Heaters.

Name _____
Company _____
Address _____
City _____ Zone _____
State _____ C-61

When inquiring check CP 4391 on handy form, pgs. 2-3

It's new... it's "NETONE" Filter Paper

- HIGH TENSILE STRENGTH
- HIGH BURST FACTOR
- ABRASION RESISTANT
- CREASE RESISTANT
- CHEMICAL RESISTANT

"NETONE" Filter Paper is a neoprene impregnated kraft paper that offers decided mechanical and chemical advantages over standard filter papers.

When compared to 60-pound unbleached kraft "NETONE" Filter Paper shows a 500% increase in wet tensile strength, wet burst factor increases from 6 to 57 and there is a marked increase in abrasion and crease resistance.

Write us about your requirements and we will be glad to send samples for your testing.

...And for your filter cloth requirements, we weave fabrics of VINCEL*, SARAN, DYNEL, NYLON, ORLON**, VINYLON Nt, and GLASS. Samples sent on request.

Solution	60-Pound Kraft	Wet Strength Resin	Neoprene Treated (3%)
H ₂ O	0	72 hr.	86 hr.
10% HCL	0	6 min.	4 hr.
10% NaOH	0	6 hr.	72 hr.

*TM —Nat'l Filter Media Corp.
**TM —E. I. duPont de Nemours Co.
†TM —Union Carbide & Carbon Corp.



General Offices & Mills: New Haven 14, Conn.
Western Office & Factory: Salt Lake City 1, Utah

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Chicago, Ill. Cincinnati, Ohio Houston, Texas Oslo, Norway Johannesburg, South Africa
2627 West 19th St. Roselawn Center Bldg. 1406 Second National Bank Bldg. Nicolai Friis Edward L. Bateman

When inquiring check CP 4392 on handy form, pgs. 2-3

CONSTRUCTION

Oil and grease resisted by service flooring

Uses: In industrial plants and institutions where oil and grease present a problem. Machine shops, spray booths and similar areas are all of the type floors suitable for renewing with this material. In addition, it finds usefulness in areas where a semi-decorative service floor is desirable.

Features: Product is a type of oxychloride cement that is highly resistant to absorption of oils, greases, fats and solvents of many kinds.

Description: Material, called Sylox, is a complete flooring "unit" in itself and no outside ingredients need be added, not even water. Each "unit" is proportioned and packaged at the factory and is designed to cover a pre-determined area at an average depth of only one-half inch. Material may be applied directly over old surfaces of concrete or wood and is available in a choice of several colors.

(Product of United Laboratories, Inc., Dept. CP, 16801 Euclid Ave., Cleveland 12, Ohio . . . or for more information reader may simply check CP 4393 on handy form, pages 2 and 3.)

Cost and time saved by water heated as used

A completely automatic heater of the piston type which injects steam directly into water, heating it only as it is used, is described in 4-page, 2-color bulletin.

Savings in fuel result because water never need be reheated. Savings in time and space are accomplished since water is heated instantly as needed and no storage tanks are required. Installation and maintenance are said to be simple.

Bulletin includes specifications and operating requirements of these steam injection heaters, plus illustrations of the principle involved.

Bul WH 12-A is issued by Pick Mfg. Co., Dept. CP, West Bend, Wis. When inquiring specify CP 4394 on handy Reader Service slip located between pages 2 and 3.

Strange Perhaps... But They Are Related!

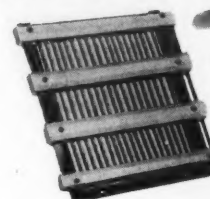
Masland Duran . . . "Folded-and-Formed" Heating Elements. What's the connection? Well, in the manufacture of Duran, the popular all-plastic material for fine upholstery, the process includes heating and curing in ovens equipped with Trent Patented

"FOLDED-and-FORMED" Heating Elements

This is another example of a quality product produced with the help of these quality heating elements . . . unequalled in efficiency, durability and economy.



"Folded-and-Formed" Heating Elements are made in Standard and Custombuilt Racks to meet any installation or K. W. requirement. What is your heating problem?



Meet us at the Chemical Show
Booth 803

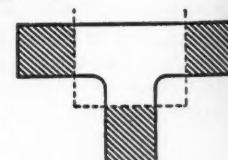


When inquiring check CP 4395 on handy form, pgs. 2-3

How the Speedline "TANGENTIAL FEATURE" cuts stainless piping costs

Now you can save up to 50% on corrosion-resistant lines by using light wall stainless pipe and versatile Speedline Fittings.

The added straight section of corrosion-resistant Speedline Fittings permits attaching unions or flanges without fouling . . .

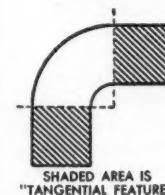


WHITE AREA INDICATES CONVENTIONAL FITTING

reduces number of welds required . . . simplifies installation . . . eliminates angle joints.

SEND FOR LATEST INFORMATION

Write a note on your company letterhead to get the complete story on the many cost-saving advantages of the Speedline System for process piping.



SHADED AREA IS "TANGENTIAL FEATURE"

Speedline distributors are located in principal cities from coast to coast

HORACE T. POTTS CO. Since 1815

502 E. Erie Avenue, Philadelphia 34, Pa.

When inquiring check CP 4396 on handy form, pgs. 2-3

CHEMICAL PROCESSING

**Packing is self-sealing
at finger-tip pressures
due to "vee" shape**

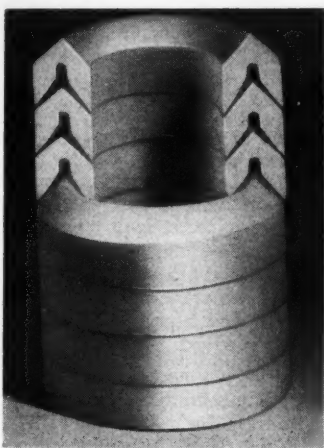
Uses: For valve stems and in hydraulic cylinders, jacks, lifts and pumps.

Features: Packing is self-sealing and self-adjusting at finger-tip gland pressures due to its "vee" construction.

Description: Completely inert to hydraulic fluids, oils, petroleum products, acids, bases or solvents, this low-friction Series S-2500 Vee-Seal pressure responsive packing is made of molded Kelon-T (Teflon).

Upon application of hydraulic pressure seal expands even with very low gland pressure against stuffing box and inward against stem for tight sealing with minimum friction. Packing is said to be more flexible and resilient than other designs.

Natural slipperiness of Kelon-T insures that equipment using Vee-Seals cannot "freeze" even if in-



Assures tight sealing with minimum friction

operative for long periods of time. Useful temperatures range from minus 110°F to plus 500°F.

(Product of Dept. G, W. S. Shamban & Co., Dept. CP, 11617 W. Jefferson Blvd., Culver City, Calif. . . or for more information check CP 4397, pages 2 and 3.)

For more information on product at right, specify CP 4398 . . . see information request blank between pages 2-3.



Millions of tiny alumina "bubbles" help block heat loss through this . . .

New Castable Cement—Good to 3100 F

Here's a castable cement that is also *one of the most refractory materials available*. Consisting of pure alumina bubbles and highest grade calcium aluminate, it is inherently inert, chemically stable, and will withstand temperatures up to at least 3100 F with practically no shrinkage. It is unaffected by furnace atmospheres and combustion gases. The hollow spheres of alumina make the cement one of the best insulating refractories for really high temperature work. It also follows that it is light in weight, and has low heat capacity.

These ALFRAX® BI aluminum oxide cements (there are actually three types) are particularly easy to install. You just mix with water and pour—like Portland cement. Linings can be put in with a minimum of labor and down time. And, once in, they stay in, even under conditions that quickly destroy other refractories.

For example, one manufacturer lines high temperature ducts (that are sometimes run at over 3000 F) with 3"-thick MULLFRAX® electric-furnace mullite shapes, and backs these

up with 8" of ALFRAX BI cement. Cement shrinkage is practically nil, even at these temperatures. The cement stays free of cracks, and makes a durable monolithic lining that prevents seepage of high-pressure gases.

You have to experience comparative results to believe them. For full data on these castable cements and on other super refractories by CARBORUNDUM, use this handy coupon.

CARBORUNDUM

Registered Trade Mark

Dept. H-103, Refractories Division
The Carborundum Company
Perth Amboy, N. J.

Please send descriptive data to:

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Position _____
Company _____
Street _____
City _____ Zone _____ State _____



Here Are Facts You Should Know About Electric Motor Bearings

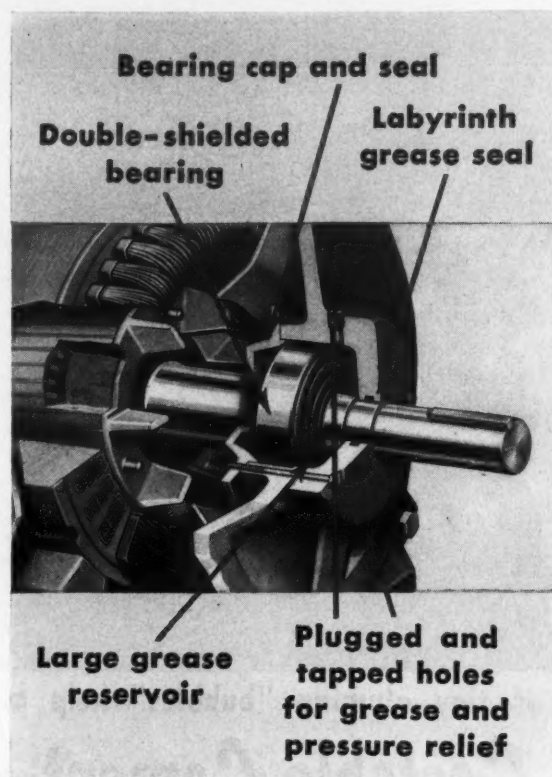
AN ideal motor bearing would operate for indefinitely long periods under all types of conditions without requiring any attention whatever. However, in the opinion of our engineers, such a bearing and its attendant lubricant are not yet available on the commercial market. Consequently, bearings for many types of operations, particularly where overloading, extreme temperature ranges and chemical and dirt laden atmospheres are involved, require special lubricants or regular lubrication schedules.

Of course, bearings suitable for many kinds of operation under normal conditions can be built to require no attention for very long periods — usually several years. Allis-Chalmers can supply sealed bearings in all frame sizes through 505 on short delivery and without extra cost for applications of this type.

Which is the Best Design for Your Application?

We believe that the design used in standard Allis-Chalmers drip-proof, test and explosion-proof motors represents the best design for most industrial users.

The Allis-Chalmers standard design consists of a pre-lubricated, double-shielded bearing mounted in the end housing with a generous grease reservoir. Plugged and tapped holes are provided for grease and for pressure relief. Under normal operating conditions, this design will operate as long without attention as any other type of bearing in use today. But where difficult operating conditions make re-lubrication desirable, it can be done as part of the normal lubricating routine without dismantling the motor.



The large grease reservoir and shielded bearing design assure that grease lost from the bearing due to high operating temperatures or other causes will be replaced automatically.

For further information on bearing design and other features of Allis-Chalmers motors, call your nearby Allis-Chalmers District Office or Authorized Distributor.

A-4147

ALLIS-CHALMERS

Milwaukee 1, Wisconsin



When inquiring check CP 4399 on handy form, pgs. 2-3

New

Describes how to cut down on flying glass injuries

How to cut down human casualties from flying window glass in event of an atomic bombing is described in a 37-page Government research report now available. Scientists tested various sizes and thicknesses of the following glazing materials: window glass, wire glass, safety glass, tempered glass, plastic coated glass and acrylic plastic sheeting.

For each material they determined these primary factors on which the shattered-glass hazard depends: 1) the maximum shock wave pressure at which there is no shattering; 2) the minimum shock wave pressure at which there is shattering; 3) the shatter pattern; 4) size of fragments; and 5) the inertia of the fragments.

Report concludes that glass with a plastic coating is the safest form of glass, and that plastic window materials are still safer glazing materials in event of A-bomb blast.

PB 111111, Shock Tube Tests of Glazing Materials, Nov. 1952, in mimeographed form is available for \$1 from Office of Technical Services, U.S. Dept. of Commerce, Washington 25, D. C.

Pictures show samples of equipment fabrications

Photographs with descriptive captions reveal the wide variety of process equipment built by manufacturer. Specialized equipment shown ranges from large installations to component parts, and includes tanks, stills, autoclaves, mixers, towers, bins, large press bases, and pipe. Almost any kind of metal can be specified. Manufacturer's facilities are also described.

Bul 550 is issued by Engineering Sales Division, L. O. Koven & Brother, Inc., Dept. CP, 154 Ogden Ave., Jersey City 7, N. J. When inquiring specify CP 4400 on handy form, pages 2 and 3.

Programs management seminars

Sponsored by the American Management Association, some 130 educational seminars dealing with 86 specific management problems are now under way and will continue through January 27, 1954. Two types of seminar are scheduled for this fall: workshop seminars, discussion groups for exchange of information and ideas; and orientation seminars, for instruction, practice or review in a particular management subject.

Ten orientation seminars will meet this fall to discuss development of management personnel,

Literature

budgeting, executive compensation, supervisory training, marketing research, automation, office methods and procedures, psychological testing and salesmen's compensation and territories.

Workshop seminars, intensive small-group discussions, will cover 75 different topics in seven fields of management — finance, general management, insurance, manufacturing, marketing, office management and personnel. Representative subjects include internal financial reporting, top management planning and control, administration of employee benefit programs, methods improvement, selection and training of field salesmen, records management and forms control and wage and salary administration.

Copies of the seminar announcement may be obtained by writing Seminar Registrar, American Management Association, 330 W. 42nd St., New York 36, N. Y.

Six bulletins show complete line of "CF" lift trucks

Publication of six bulletins covering the complete Standard Skylift "CF" line of riding-type electric industrial trucks has been announced.

Detailed specifications of all the trucks in the line, having capacities of 1000, 1500, 2000, 3000 and 4000 lb, are included in brochure. Features of the units include Class "H" silicone-insulated motors, patented duolift rams with leakage return, highest lift speed of any electric truck as reported by manufacturer, hydraulic safety fuses, high degree of accessibility for maintenance.

Six bulletins on the "CF" line are issued by the Automatic Transportation Co., Dept. CP, 149 W. 87th St., Chicago 20, Ill. When inquiring specify CP 4401 on handy form, pages 2 and 3.

Comprehensive listing hits meters, controls

Printed in two colors, 16-page bulletin provides information on complete line of meters, control equipment and engineering services. It is slanted for engineers in power plants, public utilities and process plants. Bulletin is indexed by means of 15 measured variables common to processing operations. Basic specifications, illustrations and detail literature references are included.

Bul 18 is issued by Bailey Meter Co., Dept. CP, 1050 Ivanhoe Rd., Cleveland 10, Ohio. When inquiring specify CP 4402 on handy form, pages 2 and 3.

"MUST" Reading

for Plant Engineers

Life extension for condenser tubes

Table of contents

PREVENTIVE METALLURGY TO MAINTAIN TUBE HEALTH	page 3
The life span of a condenser tube depends upon the water and operating conditions and the alloy selected.	6
PROTECTIVE FILMS ARREST CORROSION	10
Life expectancy is prolonged if protective films form soon after service begins.	11
REVERE MINUTE MEN IN CONDENSER TUBE WAR	11
"Trouble shooters" serve as liaison between tube users and Revere Research Laboratory.	11
DEVELOPMENT WORK IN TUBE ALLOYS	11
Experiment in Revere laboratories develops basic knowledge of tube performance under variable conditions.	11
Various types of corrosion encountered	11

• We doubt very much if you have ever read a booklet on Condenser Tubes, quite like this one.

Plant engineers should find it of unusual interest in these times when it is more important than ever that every last ounce of use be squeezed out of the condenser tubes in their plants.

This 28-page booklet includes data on various copper alloys, photos of cut-away tube sections showing various types of corrosion encountered in condenser tube service and photomicrographs showing the grain structure of different kinds of metals under varying operating conditions.

Send for your copy today. Please make request on your firm's letterhead. Thank you. Revere Copper and Brass Incorporated, 230 Park Avenue, N. Y. 17, N. Y.

REVERE

COPPER AND BRASS INCORPORATED

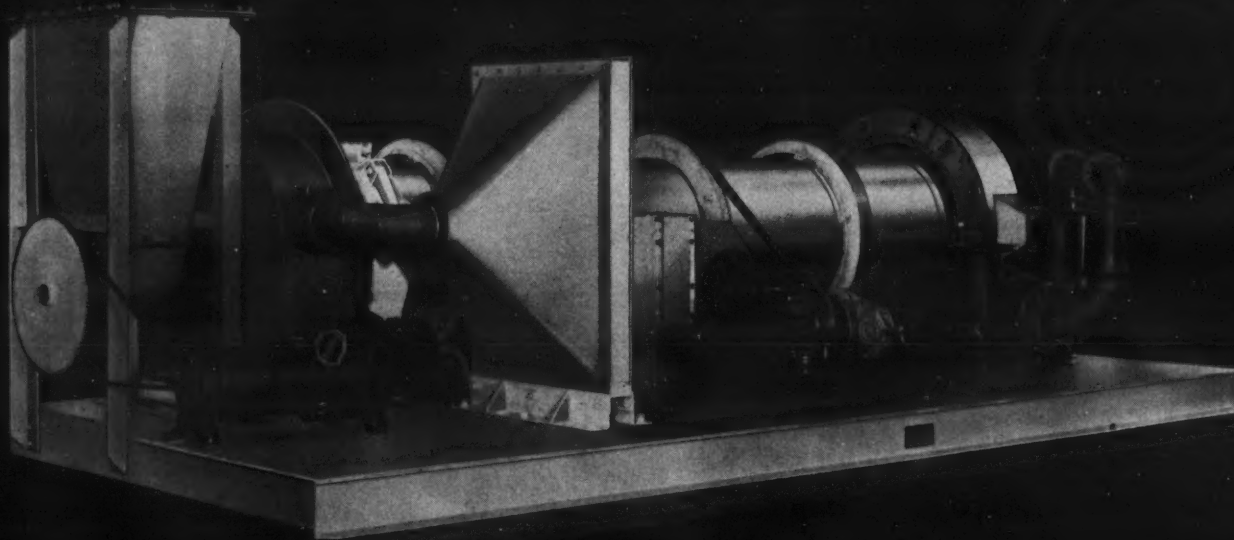
Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y. — Sales Offices in Principal Cities, Distributors Everywhere

SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY

When inquiring check CP 4403 on handy form, pgs. 2-3



NEW LITERATURE

Handbook for pipefitters

Practical and useful handbook was written especially to provide a quick solution to problems met in the shop or in the field such as those in connection with pipe bending, mitering, layout, threading and offsetting.

Sections of book include: figures for setback and length of bend for a wide range of angles and radii (67 pages); offsets (9 pages); mitered joints (21 pages); pipe data (8 pages); screwed fittings (17 pages); butt welding fittings (14 pages); flanged fittings (50 pages); valves (7 pages); solder joint fittings (17 pages); mathematical data (47 pages); and pipefitters dictionary (8 pages).

"Pipefitters Handbook" is available by remitting \$6.00 direct to The Industrial Press, Dept. CP, 148 Lafayette St., New York 13, N. Y.

Spots can label defects — automatically

Robot can ejector that inspects labels and drops out rejects automatically is discussed in two-page bulletin. Unit will detect the following defects: shiners, under part of label lap torn, top part of label lap torn, twisted or uneven labels, under part of label turned out, label lap turned out, double label, and flagging label.

Machine is simple and sturdy and will operate smoothly at any labeling speed. Cans may travel through bead to bead, but only imperfectly labeled cans are rejected. Model D1 is adjustable to cans sizes from 211 x 304 to 404 x 708. Model E1 is adjustable for baby food size cans.

Bul on Robot Can Ejector is issued by Illumi Tronic Engineering Co., Dept. CP, 680 E. Taylor Ave., Sunnyvale, Calif. When inquiring specify CP 4404 on handy form, pages 2 and 3.

For more information on product at left, specify CP 4405 . . . see information request blank between pages 2-3.

stainless steel

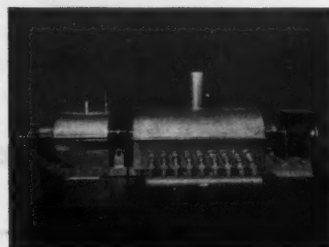
Anti-Biotic Dryer

... Specially designed unit removes an organic solvent from a newly developed anti-biotic — avoids product contamination.

● The drying cylinder with ground and sand blasted welds, and flights that lift the material and cascade it down through the heated air stream, present a smooth interior surface, without corners, permitting the entire interior surface to be cleaned thoroughly and quickly. Feed hopper, variable speed screw feeder, heating coils, air blower, air sterilizer, exhaust fan and cyclone dust collector are mounted on the same frame to insure permanent alignment of all parts and efficient trouble-free operation. This unit is an example of Bartlett-Snow's ability to design and build equipment that meets the most exacting requirements. Let us work with you on your next drying problem!



Rotary Cooler with Continuous Spiral Flight Permitting the Rate of Cooling to be Controlled by the Speed of Shell Rotation.



Experimental Calciner, Determines the Preferred Operating Conditions Preliminary to Building Full Size Plant Equipment.

DESIGNERS

ENGINEERS

**BARTLETT
B-SNOW**
CLEVELAND 5, OHIO

FABRICATORS

ERECTORS

Dryers • Coolers • Calciners • Kilns
"Builders of Equipment for People You Know"

ION Exchange

(Continued from page 5)

by zeolite water softening. Another use of ion exchange in metathesis reactions is the production of colloidal silicic acid by the use of cation exchange. A solution of sodium silicate is passed through a cation exchange on the hydrogen cycle, thus producing silicic acid.

Other exchange reactions employing ion exchangers range all the way from the use of cation exchangers to treat human blood, to the treatment of phosphoric acid pickling baths or chromic acid anodizing baths. For example, blood is softened to remove calcium, which prevents clotting during further processing. In pickling or anodizing baths, cation exchangers on the hydrogen cycle remove the metallic ions from the baths, thus avoiding the necessity of dumping the baths when they become contaminated.

Ion exchangers may be employed in chromatographic columns which can separate elements having such similar properties as the rare earths. Another type of process is the separation of the amino acids produced by hydrolyzing proteins. By the use of various anion and cation exchangers and by proper adjustment of the pH, quite complete separation of these complex mixtures can be achieved.

Concentration reactions are usually involved with the recovery of a valuable material from a dilute solution. One of the large scale uses of this type of process is the recovery of copper from waste water produced in the manufacture of rayon by the cuproammonium process. Using a cation exchanger, it is possible to recover the copper as a several-per cent solution, from one containing only hundreds of parts per million.

A number of materials can be recovered from plating or other metal treating wastes by cation or anion exchange. Metals such as nickel, copper, and zinc can be saved from waste in a useful form. Furthermore, the nuisance produced by the wastes from such processes is greatly reduced, as in the case of the recovery of chromates by anion exchange. In this instance, only a few parts per million can be seriously objectionable in plant waste waters. By the use of an anion exchanger this chromate can be recovered and re-used, thus saving the value of the chromates and minimizing the waste disposal problem.

Still another application is the use of ion exchangers as catalysts. Both strongly acidic cation exchange resins on the hydrogen cycle and highly basic anion exchangers on the hydroxyl cycle have been found useful as solid catalysts in reactions catalyzed by acid or bases.

Recently there has been interest in ion exchangers in the form of membranes. These have various uses such as barriers for processes where the selective transport of anions or cations is desired. Continued research on ion exchangers and ion exchange processes will improve existing techniques and uncover entirely new ones.

In moist or wet surroundings...it pays to install trouble free

ALLEN-BRADLEY MOTOR CONTROL

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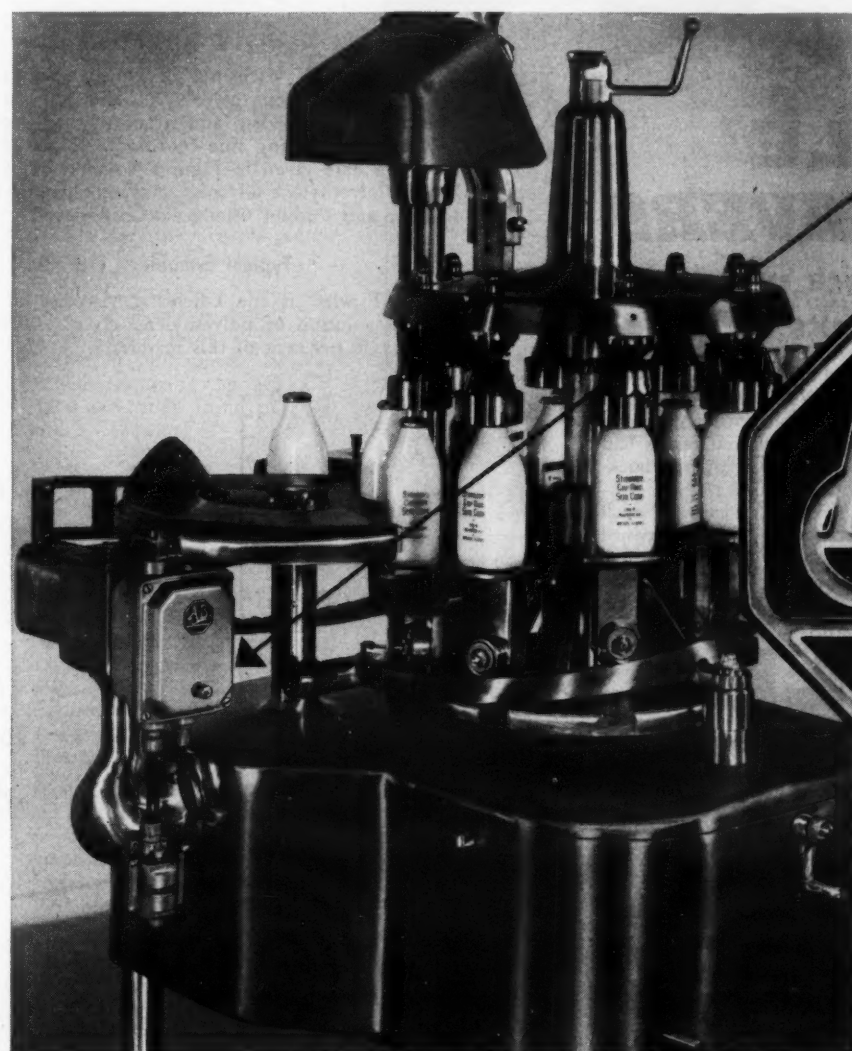
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In damp or wet surroundings protect men, motor, and equipment with Allen-Bradley NEMA 4 ENCLOSURES.



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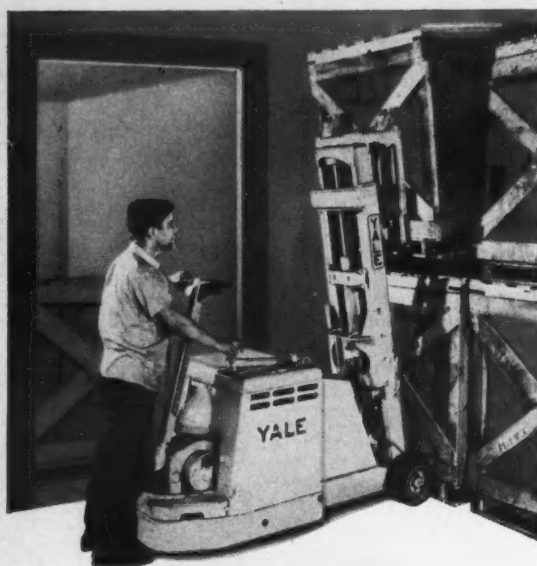
Bulletin 709 Automatic Starter



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Bottle filling machine, manufactured by Standard Cap & Seal Company, equipped with an Allen-Bradley Bulletin 709 Starter in a NEMA 4 Enclosure.

When inquiring check CP 4406 on handy form, pgs. 2-3



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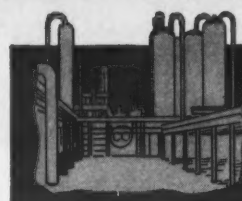
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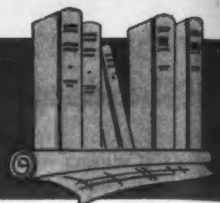
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Processing and Engineering Data



58

Viscosities of Aqueous Solutions Of Polyethylene Glycols 200 and 300

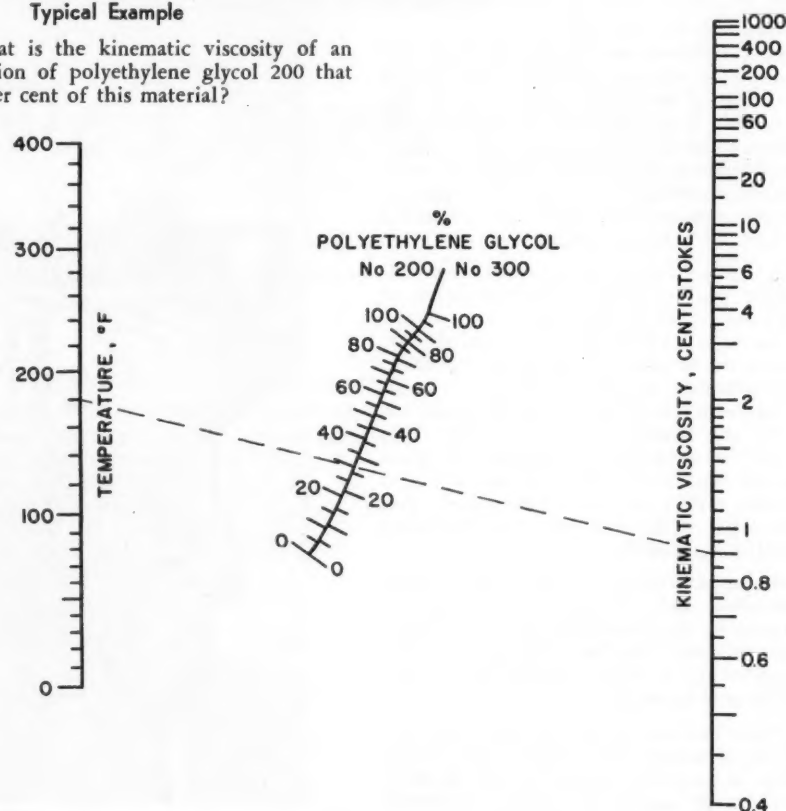
By D. S. DAVIS
Professor of Chemical Engineering
Virginia Polytechnic Institute

KINEMATIC viscosities of aqueous solutions of polyethylene glycols 200 and 300 can be estimated conveniently and accurately by means of the accompanying line coordinate chart. It is based on data given in Figures 5 and 6 of "Carbowax Polyethylene Glycols," a presentation of the Carbide and Carbon Chemicals Corporation.

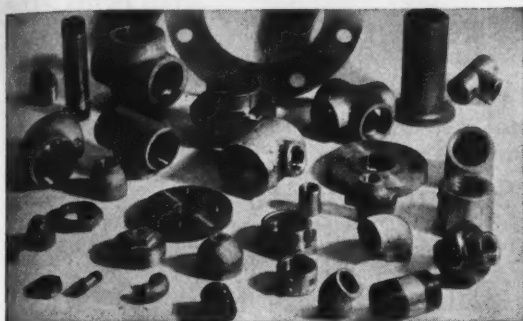
Connect 180 on the temperature scale with 30 on the lefthand percentage scale (for glycol No 200) and note the intersection with the kinematic viscosity scale at 0.9 centistoke. The chart can be used for polyethylene glycol 300 when the righthand percentage scale is employed.

Typical Example

At 180°F what is the kinematic viscosity of an aqueous solution of polyethylene glycol 200 that contains 30 per cent of this material?



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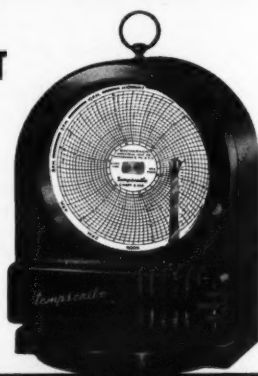
The International Nickel Company, Inc.
67 Wall Street, New York 5, N. Y.

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-10° to +50°F	24 Hours
30° to 60°F	7 Days
40° to 100°F	24 Hours
40° to 100°F	24 Hours
40° to 90°F	8 Hours
60° to 90°F	24 Hours
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NEW LITERATURE

Highlights versatility of mobile laboratory

Feature article of informative bulletin deals with applications and features of mobile laboratories in present-day industry and other fields such as public health and military uses. Interesting discussion outlines the historical role which this type of equipment has played and presents a detailed picture of its uses. Numerous photographs show units in actual operation. Subsequent section describes a unit of this type which manufacturer intends to place on the market shortly.

A mixer for dry-sample mixing; a Saybolt Viscometer for petroleum testing; and a dual-purpose tool-steel mortar and pestle are described in later sections of factual bulletin.

Announcement is made of a complete line of radioactive reagents. These products allow users to buy inexpensive radioisotopes for laboratory use.

"The Laboratory," Vol 22, No. 5 is issued by Fisher Scientific Co., Dept. CP, 717 Forbes St., Pittsburgh 19, Pa. When inquiring specify CP 4410 on handy form, pages 2 and 3.

Announces new design of cascade coolers

Newly designed Karbate impervious graphite sectional cascade coolers are described in catalog section. The three standard sizes are illustrated by dimensioned engineering drawings, and their features are explained in the literature.

Section contains information to aid in selection, complete tables of specifications, and nomographs for finding cooling water requirements, overall heat transfer coefficients and required cooling surface.

Catalog Section S-6820 is issued by National Carbon Company, a Division of Union Carbide and Carbon Corporation, Dept. CP, 30 E. 42nd St., New York 17, N. Y. When inquiring specify CP 4411 on handy form, pages 2 and 3.

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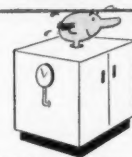
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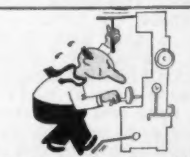
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OUR NEW FLEXIBLE STANDARDS PROGRAM makes these tremendous savings possible. A wide range of tube sheets, bonnets, nozzles, tubes, baffles and other parts are carried in stock — ready for immediate assembly to your specifications. This system helps to speed deliveries, too.

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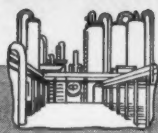
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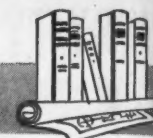
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Processing and Engineering Data



59a

Solubility of Sodium Sulfate In Ethylene Glycol-Water

By J. D. PHILLIPS

and D. S. DAVIS

Professor of Chemical Engineering
Virginia Polytechnic Institute

COMMERCIAL crystallization of sodium sulfate in most conventional crystallizers is difficult because of the well-known tendency of the salt to form a tenacious scale on heat transfer surfaces. This is due to the inverted solubility curve of the salt. Improved method of crystallization calls for addition of ethylene glycol which

renders the salt less soluble and less variable in solubility with temperature.

Vener and Thompson¹ have presented extensive data in the form of smoothed solubility isotherms covering the range between 25 to 100°C, 8.0 to 99.2% of ethylene glycol, and 0.23 to 33.0% anhydrous sodium sulfate. For each concentration of ethyl-

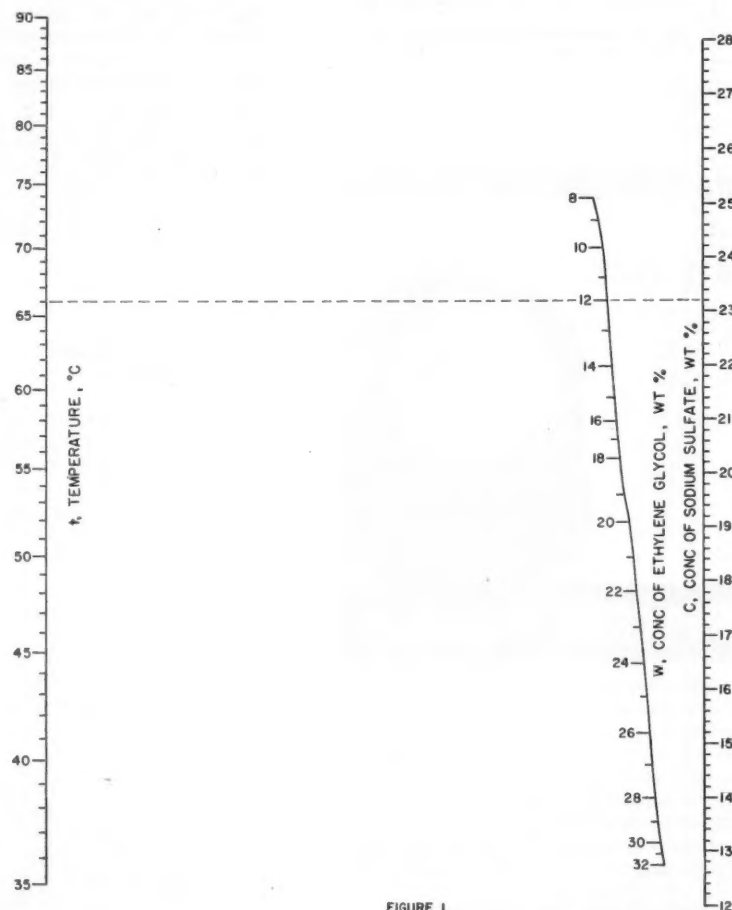


FIGURE 1

Agricultural pesticide now undergoing commercial development

Currently undergoing commercial development as an agricultural pesticide is N-trichloromethylthio tetrahydrophthalimide (commonly known as SR-406, Orthocide-406, or Captan). Product is an odorless, colorless crystalline compound having a melting point of 172-173°C and density of 1.69 gm/ml. Captan is only slightly soluble in common organic solvents and is stable at room temperature, even in the presence of moisture, for long periods of time.

In addition to fungicidal activity, SR-406 has been shown to stimulate plant growth. Improved rooting of some cuttings and growth of some seedlings after seed treatment have been noticed. Color of some apples is enhanced by applying SR-406. Some 18 derivatives of SR-406 have been prepared and show varying degrees of fungicidal activity.

(Summary of paper "The Preparation and Some Properties of N-Trichloromethylthio Tetrahydrophthalimide" by A. R. Kittieson, Chemical Division, Esso Laboratories, Standard Oil Development Co.)

New Concept in Glass

(Continued from page 7)

grew to \$56 million in 1944) not only were younger men in the organization drafted, but Harold Boeschstein himself was called to Washington as a member of the War Production Board. (He served three years, the last two as vice-chairman.)

Things to Come

Perhaps we are not conscious of fibrous glass in the role of an important everyday material. But it is already an important one in things like home insulation, thermal insulation for stoves and ovens, and in many other common articles. Its first workaday job, as an air filter, has resulted in a revitalized warm-air heating industry . . . and in the same role it is important to air conditioning. It was the first workable filter cheap enough to be thrown away when it became clogged.

Sportsmen have been lavish in praise of the glass fishing rod. They may have used one in a glass boat. In both cases the "glass" means glass fiber reinforced plastic. It is the same material that's causing a stir now in the automobile industry . . . it may lead to the end of the "rumpled fender school" of cartoons, for rumpling a fender of glass-and-plastic is a tough job.

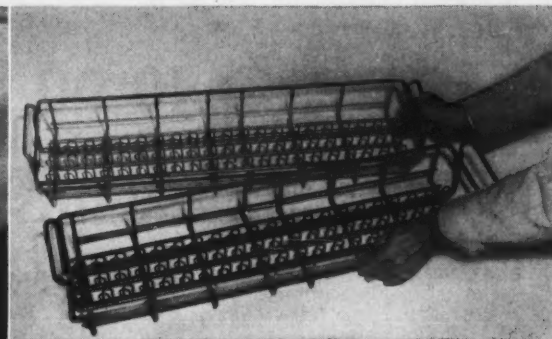
And there are many smaller uses for Fiberglas in luxury textiles, easy-to-clean lace curtains, surgical dressings, and other out of the way places. Right now work is in progress on glass-and-plastic industrial pipe. If it pans out, this could be a major factor in bringing a prediction true: A glass fiber market of \$400 million a year. A whole new concept of the utility of glass is making this oldest of artisan's materials a strong candidate for many uses.

Another new development using

B. F. Goodrich Chemical raw materials



B. F. Goodrich Chemical Company does not make these tote baskets. We supply the Geon vinyl resin for the plastisol compound only.



**JET ENGINE
BLADES
GET BATH IN
CORROSION-PROOFED
BASKET!**

DE-GREASING jet engine compressor blades in corrosive trichlorethylene was a troublesome problem. The zinc coating from the tote baskets came off easily, dulling the steel alloy blades.

A corrosion-resistant coating was needed for the baskets. A plastisol based on Geon paste resin was developed, tried and works perfectly. The plastic surface is hard and slick enough to promote rapid drain-off and minimize carry-over. This impervious coating adheres tightly—prevents the

solvent from creeping under.

Other uses for plastisols made with Geon paste resin include linings to protect metal drums for shipping acids, sun-and-weather resistant coatings for upholstery fabrics, coatings for plating racks. These plastisols may also be used for many other dipping, casting, coating and molding operations. They resist heat and cold, aging, abrasion and many chemicals.

Find out how Geon paste resin or other Geon materials may help you improve or develop more sale-

able products. We'll help you select the Geon material best suited to your needs. Please write Dept. GF-5, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, O. Cable address: Goodchemco. In Canada: Kitchener, Ont.



GEON RESINS • GOOD-RITE PLASTICIZERS . . . the ideal team to make products easier, better and more saleable.

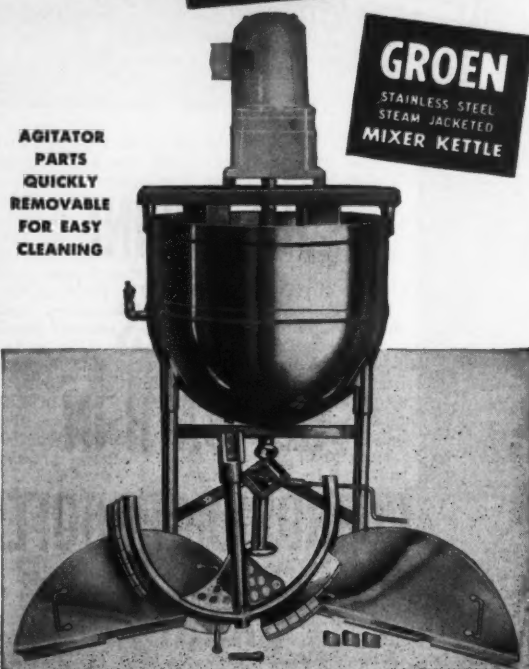
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When inquiring check CP 4415 on handy form, pgs. 2-3

208



Processing and Engineering Data



59b

Solubility of Sodium Sulfate

LITERATURE CITED

(1) VENER, R. E. and THOMPSON, A. R., *Ind Eng Chem* Vol 41, p 2242 (1949)

ene glycol, their data can be correlated by the equation —

$$\log t = a + bC$$

where:

t = temperature °C
 C = concentration of anhydrous sodium sulfate wt %

a & b depend on concentration of ethylene glycol

Nomographs given here can be used to solve the equation. Solubilities of sodium sulfate read from Fig 1 are accurate to about 0.5% based on absolute values; those read from Fig 2 agree with experimental data to within 3%.

Typical Examples

What is the solubility of anhydrous sodium sulfate at 66°C in an aqueous solution containing 12 wt % ethylene glycol?

In Fig 1, connect 66 on t -scale with 12 on W -scale and extend line to C -scale. Concentration of sodium sulfate is seen to be 23.2%.

What is the concentration of ethylene glycol in an aqueous solution when solubility of sodium sulfate at 52°C is 9.6 wt %?

In Fig 2, connect 52 on t -scale with 9.6 on C_1 -scale and read 38 wt % of ethylene glycol on the W_1 -scale. Note also that Fig 2 t , W_2 , and C_2 scales can be used to show 1.5 wt % of anhydrous sodium sulfate soluble in an aqueous solution at 48°C and containing 73 wt % of ethylene glycol.

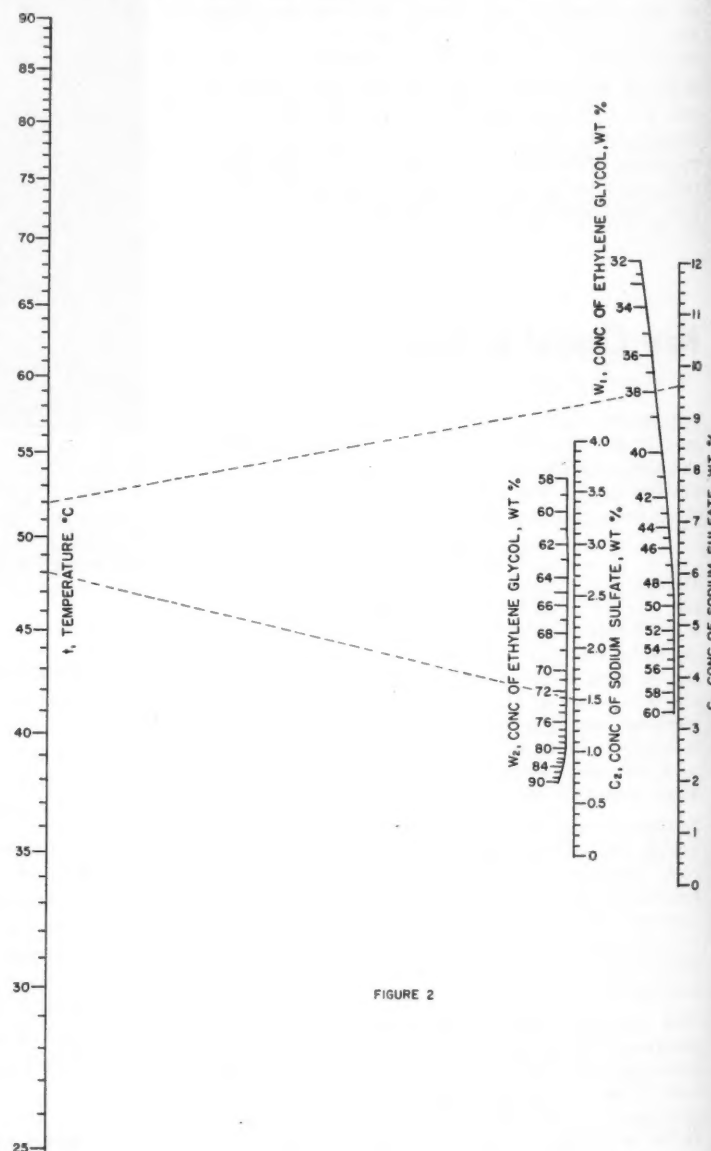


FIGURE 2

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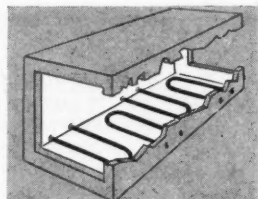
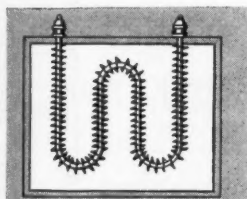
Our perforations are accurate to size, uniformly spaced and can be furnished in any metal you want, as well as in plywood, hardboard, plastic and other materials available in sheet, plate or coils.

We invite those requiring perforated material to ask for our catalog No. 62 and to remember that "If it can be perforated H & K can perforate it."

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GENERAL ELECTRIC

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NEW LITERATURE

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Flame cutter which merely requires connection to user's source of gas and power (all fittings and controls are integrated in unit), is described in four-page illustrated bulletin.

Variable speed transmission unit permits easy control of cutting speed required for various sizes of new or used welding fittings. Speed is constantly adjustable while machine is in operation. In addition, an instant-reversing electric motor permits rotating fitting in either direction.

Adjustable degree plate permits fitting to be cut at any angle. Wide assortment of jigs are available to handle all types of fittings. Table which holds fittings may be revolved in either direction at speeds varying from 0 to 5 rpm. Table has steel base and is equipped with leveling screws.

Bul FC-8 is issued by Vernon Tool Co., Ltd., Dept. CP, 1101 Meridian Ave., Alhambra, Calif. When inquiring specify CP 4418 on pages 2 and 3.

Graphed data provided on speed changers

General specifications and ratings are shown in graphic information provided in technical data sheet No. 3. Two color data sheet is issued by Metron Instrument Co., Dept. CP, 432 Lincoln St., Denver 3, Colo. When inquiring specify CP 4419 on handy form, pages 2 and 3.

Catalogs electric tools and accessories

Complete illustrations, descriptions and specifications on all of manufacturer's universal electric industrial and automotive tools are given in 40-page catalog. Accessories and attachments available are also shown. Cat 39-A is issued by Thor Power Tool Co., Dept. CP, 175 N. State St., Aurora, Ill. When inquiring specify CP 4420 on handy form, pages 2 and 3.

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- **Positive displacement type**, pressures to 70 psi., volume to 10 GPM, for laboratory, pilot plant or low volume chemical feed in plant scale production. Ask for Bulletin AC-753.



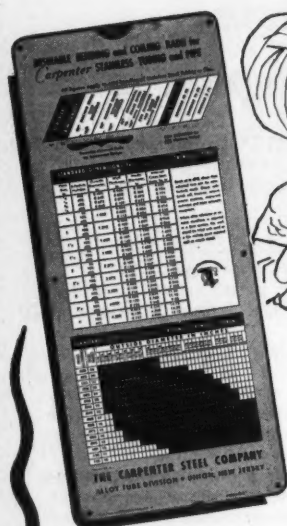
ECO

ENGINEERING COMPANY

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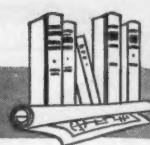
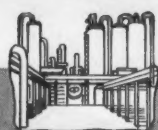
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THE CARPENTER STEEL COMPANY
Alloy Tube Division, Union, N.J.

When inquiring check CP 4422 on handy form, pgs. 2-3



CHLORINATION And Chemical Feed Nomograph

Courtesy of BUILDERS IRON FOUNDRY*
Providence 1, Rhode Island

THIS nomograph for chlorination control has been developed to aid in determining setting of chlorine gas feeders for treatment of water, sewage, industrial wastes, etc. However, most dry and liquid chemical feeders involve consideration of the same factors, hence the nomograph can be used in connection with many other chemical feed problems.

In problems where any of the variables lie outside the noted range of nomograph scales, factors of multiples of ten may be used. In this case answers need only be corrected by moving the decimal point. Readability and accuracy are best when solution line crosses middle scale at (or close to) a right angle. Upper or lower portion of middle scale may be used with a corresponding decimal point shift to avoid inaccuracies at scale extremes.

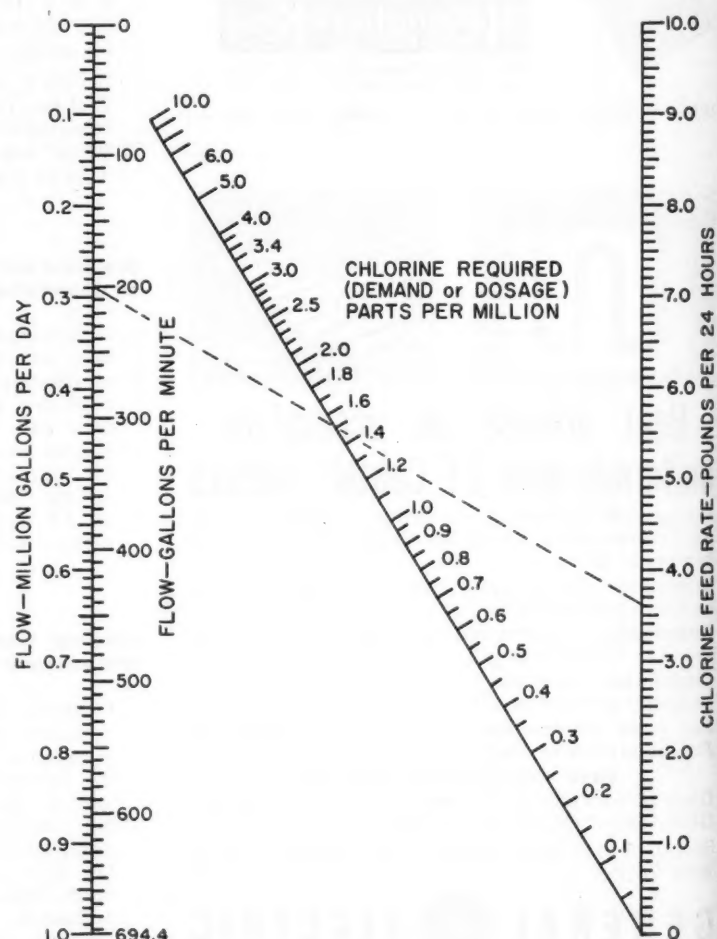
Typical Example

A flow of 200 gpm is to be chlorinated with 1.5 ppm of chlorine. What chlorine feed rate should be used?

Connect 200 gpm on flow-scale with 1.5 on parts per million scale. When this straight line is extended to feed rate scale, an answer of 3.6 pounds each 24 hours is indicated.

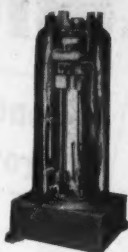
*This data is taken from BIF Industries "Keep Sheet #21" (copyright 1953 by BIF) and nomograph is reproduced here by permission of the copyright owner.

Dashed line shown on nomograph would be the accurate solution to a problem where only 0.15 ppm was desired — with a decimal point correction of 10^{-1} to be made in answer. Note increase in accuracy in this compared with placing straightedge through 200 and 0.15 points.



- CONTINUOUS ANALYSIS CONTROL
- AUTOMATIC RECORDING
- EXTREME ACCURACY
- QUICK ADAPTABILITY

THE LISTON-BECKER IR ABSORPTION TYPE PLANT STREAM ANALYZER



- RESPONSE of 90% complete in 1/2 second.
- SENSITIVITY as low as 0.005% for full-scale deflection.
- NOISE LEVEL which is extremely low.
- ZERO DRIFT of less than 1% full-scale per 8 hour day.
- INTEGRAL THERMOSTATING.
- SELECTIVITY exceeding that of high-resolution IR Spectrometer.

LISTON-BECKER Model 21 non-dispersion infra-red analyzers are of the positive type. They are designed specifically for the industrial analysis of most heteroatomic gases including CO, CO₂, NH₃, CH₄, C₂H₂, and water vapor. A pick-up section (illustrated) can be located as much as 600 feet from the main controls. Write for full particulars.

"FOREMOST MANUFACTURERS OF INFRA-RED GAS ANALYZERS"
Visit our exhibit at Exposition Chemical Industries.

LISTON-BECKER
INSTRUMENT COMPANY, Inc.
656 HOPE STREET • STAMFORD • CONN • USA



When inquiring check CP 4423 on handy form, pgs. 2-3

BRIEFS...

*from contemporary
publications*

READ THEM... IN THIS ISSUE

You get a "quick look" at the most valuable articles being published in this field, and kindred fields... by reading the "BRIEFS" section of CHEMICAL PROCESSING every month.

Our Editors read more than 50 contemporary publications every month... select those articles they believe you will want to know about... and, in terse style, they tell you about them. Name of publication and issue are given so you can read those you want to know more about.

It's a monthly service... to save you time... yet keep you informed. See "BRIEFS" in this issue, page 152.

NEW LITERATURE

Data on steel castings presented in manual

Comprehensive data detailing applications emphasizing the reliability, strength, and versatility of steel castings as an engineering material is presented in 16-page, illustrated manual.

Incorporated is much essential data of value to the materials engineer, design and production engineering organizations, purchasing departments, and others active in design, processing, and specifications categories.

Included also is definitive material covering steel casting properties, specs, design, joining, heat treating, and inspection procedures. A 2-page chart is devoted to general engineering types of steel castings, classified by tensile strengths.

Manual "Carbon and Low Alloy Steel Castings" is available from Steel Founders' Society of America, Dept. CP, 920 Midland Bldg., Cleveland 15, Ohio. When inquiring specify CP 4424 on handy form, pages 2 and 3.

Announces welding developments

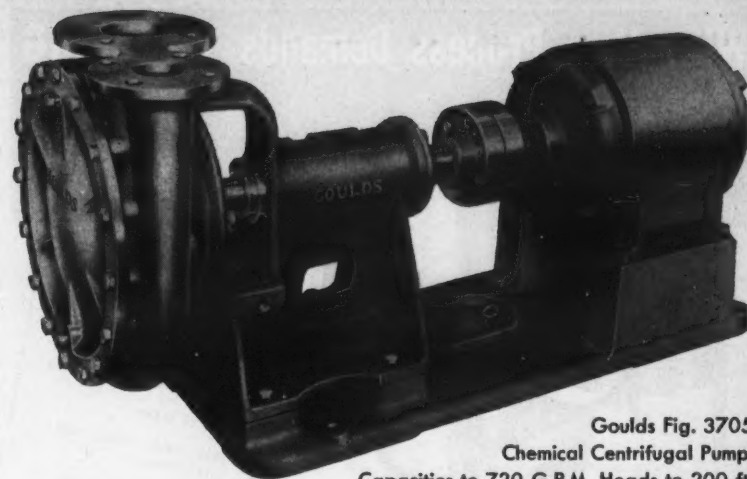
Eight-page folder contains short, factual descriptions of recent welding alloy and bonding developments of manufacturer.

Booklet TIS 1621 is issued by Dept. "P", Eutectic Welding Alloys Corp., Dept. CP, 40-40 172nd St., Flushing 58, N. Y. When inquiring specify CP 4425 on handy form, pages 2 and 3.

Compares product drying methods

Eight-page bulletin in revised form shows diagrams on conventional method of drying products compared to method employed by using a spray dryer.

Booklet entitled "Snell Packaged Unit Spray Dryers" is issued by Foster D. Snell, Inc., Dept. CP, 29 W. 15th St., New York 11, N. Y. When inquiring specify CP 4426 on handy form, pages 2 and 3.



Goulds Fig. 3705
Chemical Centrifugal Pump.
Capacities to 720 G.P.M. Heads to 200 ft.

Now available in these 8 different materials!

You know the Goulds Fig. 3705 as the pump that is saving chemical plants thousands of dollars in handling corrosive liquids such as acids and alkaline liquors.

You've asked if it could be supplied in materials other than stainless steel 316 and FA-20. Here's the answer:

You can now take your choice of these eight different materials:

1. Stainless steel 316
2. Stainless steel FA-20
3. Stainless steel 304
4. All iron
5. All bronze
6. Bronze fitted
7. All iron, stainless steel trim
8. All bronze, stainless steel trim

And you can take advantage of these four saving benefits:

- a. Long packing life and freedom from leakage—Stuffing box on suction side of impeller means pressure is limited to suction head.
- b. Easy cleaning and inspection—Suction and discharge connections in casing permit removal of casing cover and impeller without disturbing piping.
- c. Impeller clearance adjustable for wear—By loosening and sliding end cap along shaft you expose locking collar on outboard ball bearing, permitting you to readily adjust impeller position.
- d. Low parts inventory—Interchangeable parts permit you to keep inventories down and prevent excessive down-time.

To get full information on these new materials, plus performance curves, specifications and dimensions, contact your nearby Goulds representative, or clip and mail the coupon for new Bulletin 725.3.



GOULDS PUMPS, INC.
Dept. CP, Seneca Falls, N. Y.

Please send me Bulletin 725.3.

Name _____ Title _____

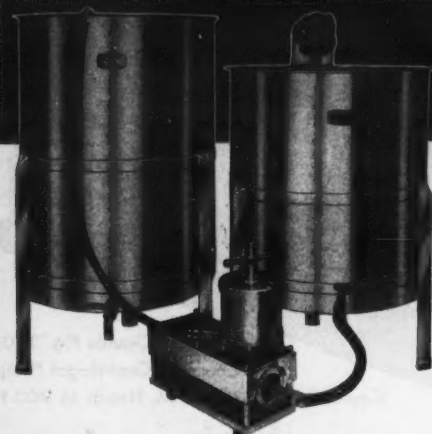
Company _____

Address _____

City _____ Zone _____ State _____

When inquiring check CP 4427 on handy form, pgs. 2-3

When Your Process Demands **FILTERING MIXING STORING**



LOOK FOR THESE FEATURES

PROVED, LOW-COST OPERATION
EASY TO CLEAN
DEPENDABLE, TROUBLE-FREE
PERFORMANCE
ALL SIZES AND CAPACITIES
LOW UPKEEP

Regardless of the size or type of your installation, whatever your process may be, there's an Alsop Filter, Mixer and Storage and Mixing Tank to "fit your job", you can be sure of getting from Alsop the right unit properly applied — you can depend on Alsop proved performance features. Alsop Filters, Mixers and Tanks are available in a complete range of sizes and capacities and Alsop Equipment is custom fitted to your application by engineers who have thorough experience in Filtration and Agitation. Look for the proved features and the benefits that Alsop Filters, Mixers and Tanks can bring to your processing operations. Write for full information, recommendations and quotations.

ALSOP
ENGINEERING CORPORATION

810 Alsop Square, Milford, Connecticut

When inquiring check CP 4428 on handy form, pgs. 2-3

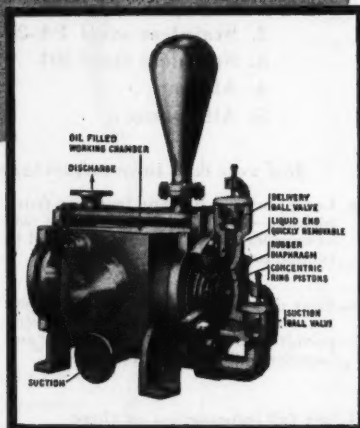
Handle Any Fluid Economically

no matter how
corrosive • abrasive
thick • heavy
viscous

Install the pumps that can really "take it." Save on over-all operating and maintenance costs. Here's why Shriver Diaphragm Pumps last longer —

- No contact between fluid handled and mechanical parts of pump.
- No packings, hence no leakage.
- Easy to inspect and clean.
- Minimum maintenance cost.
- Parts contacting fluid made of any metal, rubber or synthetic resin lined.
- Ample pressure; wide capacity range.

Bulletin 137 tells the story. Write.



Details of one fluid end: working mechanism completely separated by rubber diaphragms from the fluid handled.

Shriver Diaphragm Pumps

T. SHRIVER & CO., Inc. 846 Hamilton St. • Harrison, N. J.
Filter Presses • Filter Media • Diaphragm Pumps

When inquiring check CP 4429 on handy form, pgs. 2-3

NEW LITERATURE

Accuracy in torch cutting provided by guides

Guides for hand-held cutting torches, described in 4-page bulletin, have been designed to give workmen greater accuracy. Attached to torches quickly without tools, guides provide a means for fast, accurate cutting of circles, straight lines, angles, bevels, and sundry shapes, according to manufacturer.

Guides are available in styles to fit all makes of torches, from 70° to 90° models. They are of three principal types: a small circle guide for cutting circles 1 to 15" in diam; large circle guide for cutting circles 10 to 66" in diam; and a straight line guide. Bulletin describes and illustrates each of these various styles.

Bul 101 is issued by Dept. B39, New Era Engineering Co., Dept. CP, 458 W. 29th St., Chicago 16, Ill. When inquiring specify CP 4430 on handy form, pages 2 and 3.

Catalog presents fillers, weighers, packers

Wide variety of machines for filling, weighing, and packing dry foodstuffs and chemicals is presented in 12-page bulletin.

Most of the models discussed handle bag, can, or bottle packaging. Specifications are given for each model pictured. Operating ranges of machines are to 100 lb, and to 150 or more containers per min, depending on product and package requirements for it.

Cat 52 is issued by Weigh Right Automatic Scale Co., Dept. CP, Joliet, Ill. When inquiring specify CP 4431 on handy form, pages 2 and 3.

Symposium on steam contamination

Five papers on the subject of steam contamination presented at ASME Annual Meeting comprise symposium. Discussions and authors' closures are included. Some of the latest developments and results of research work in various phases

Ceilcrete

a stonelike corrosion proof
trowelled on surface



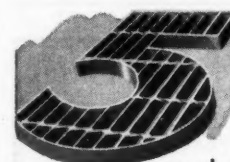
TOPPING for FLOORS • WALLS
ACID HOLDING TANKS • WASTE
DISPOSAL SYSTEMS, ETC.

THE CEILCOTE COMPANY
4832 Ridge Road, Cleveland 9, Ohio

Send for technical data
on its application, corrosion
resistance properties



When inquiring check CP 4432 on handy form, pgs. 2-3



REASONS WHY BLAW-KNOX

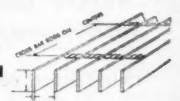
ELECTROFORGED® GRATING
IS YOUR BEST BUY

- ➔ STRENGTH
- ➔ SAFETY
- ➔ LOW UPKEEP
- ➔ LONG LIFE
- ➔ SELF-CLEANING

We factory-fit this one-piece Open Steel Flooring to your dimensions for easy installation. You can cover dangerous open areas and add useful space inside and out.

USE COUPON FOR DETAILS AND PRICES

BLAW-KNOX COMPANY
GRATING DEPARTMENT
BLAW-KNOX EQUIPMENT DIVISION
P.O. Box 1198, Pittsburgh, Pa.



Please send prices on _____ sq. ft. Grating as per specifications marked at right.

Please send prices on _____ Type _____ Stair Treads _____ inches wide.

COMPANY _____

INDIVIDUAL _____

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CITY _____ ZONE _____ STATE _____

BLAW-KNOX ELECTROFORGED
STEEL GRATING

When inquiring check CP 4433 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

of steam contamination are reviewed. Among subjects covered are: silica measurement, solubility of silica in steam, steam sampling, and separation of steam and water in boiler drums.

Symposium on steam contamination (including papers 51-A-91, 51-A-92, 51-A-93, 51-A-94, and 51-A-95) is available by remitting \$2.00 direct to Research Dept., American Society of Mechanical Engineers, Dept. CP, 29 W. 39th St., New York 18, New York.

Covers line of carton stapling machines

Manufacturer's complete line of corrugated and fiber carton stapling machines is covered in 12-page bulletin. It illustrates and briefly discusses 20 different machines, including portable, manual, semi-automatic, and fully automatic models.

Brochure also describes the operation of retractable anvil stapling head used on all of the machines. Economies possible through increased speed of closure, savings in material and manpower, small space requirements, and reduction of pilferage are explained.

Bul No. C-201 is issued by International Staple & Machine Co., Dept. CP, 809 E. Herrin St., Herrin, Ill. When inquiring specify CP 4434 on pages 2 and 3.

Shows integrator based on ball and disc

Two color illustrated sheet shows integrator unit based on ball & disc. It can be used as a computer element. Performance curbs are included as well as engineering drawings of unit.

Cat sheet 304061 is issued by Librascope, Inc., Dept. CP, 1607 Flower St., Glendale, Calif. When inquiring specify CP 4435 on handy form, pages 2 and 3.

For more information on product at right, specify CP 4436 see information request blank between pages 2-3.



It's *easy* to produce and maintain *high vacuum* in big systems

We do it every day—design and manufacture vacuum furnaces, dehydration systems, vacuum stills, pumping systems for particle accelerators, and other large high vacuum units.

The high vacuum metallurgical furnace illustrated above is typical of the large units CVC is designing and manufacturing.

CVC's ever expanding line of standard high vacuum pumps, valves, gauges, and accessories offers unlimited

possibilities for assembling efficient, high capacity gas handling systems. Our highly skilled designing and manufacturing facilities stand ready to engineer and build completely integrated high vacuum systems.

So, if a large high vacuum system can help you improve a product or process it will pay you to talk to us—**Consolidated Vacuum Corporation, Rochester 3, N. Y.** (A subsidiary of Consolidated Engineering Corporation, Pasadena, Calif.)



Consolidated Vacuum Corporation
Rochester 3, N. Y.

designers and manufacturers of high vacuum equipment
SALES OFFICES: MENLO PARK, CALIF. • CHICAGO, ILL. • CAMDEN, N. J. • NEW YORK, N. Y.

IN A FILTER OR STRAINER IT'S

design
accuracy
craftsmanship

FOR BETTER SERVICE

"CLEVELAND" FILTERS AND STRAINERS

No task too big — no problem too small for CLEVELAND strainers and filters. We design, build and produce strainers and filters for every purpose in any size or dimension or metal.

Easy to order — our engineers will help you to analyze your problem. Send us your requirements!

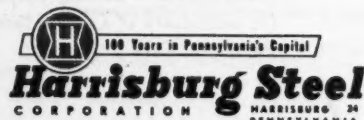
WRITE FOR BULLETIN NO. 7
THE CLEVELAND WIRE CLOTH & MFG. CO.
3574 E. 78 STREET • CLEVELAND 5, OHIO

When inquiring check CP 4437 on handy form, pgs. 2-3



DOES YOUR PLANT USE CYLINDERS FOR... FIXED GASES? LIQUID GASES? MEDICAL GASES?

Harrisburg Steel's high pressure gas cylinders have been purchased by discriminating companies throughout the processing industries for many years. Wherever storage and or transportation of gases and liquids is a part of the manufacturing picture, we suggest you investigate Harrisburg Cylinders... capacities from 14 to 400 cubic feet... domestic and export types... built to I.C.C. specifications. Write for catalog and prices.



HARRISBURG CYLINDERS
FOR HIGH-PRESSURE GASES

When inquiring check CP 4438 on handy form, pgs. 2-3

NEW LITERATURE

Details and features of refinery-type pump

Construction details and features of company's refinery-type pump are described in 8-page bulletin. Cooling methods and sealing arrangements of pump are diagrammed, and performance data, range chart, and dimensions are given.

The single-suction, single-stage type pump with center line mountings, steel castings, long water-jacketed stuffing boxes, and water-jacketed, ring-oil lubricated ball bearings, is designed to handle extreme ranges of temperatures, pressures, and volatility such as are found in refineries and in many other process industries.

Capacities of pump range to 1300 gpm, with heads to 600 ft. Design permits use with temperatures up to 800°F.

Bul 52B7775 is issued by Allis-Chalmers Mfg. Co., Dept. CP, 1151 S. 70th St., Milwaukee, Wis. When inquiring specify CP 4439 on pages 2 and 3.

Magazine on magnets

Bi-monthly magazine contains material primarily presented to aid engineers in their thinking concerning the development and design of permanent magnets that are best suited for their particular applications.

This issue contains an introduction to permanent magnets plus information on their selection and applications in industry.

Applied Magnetism, Vol. 1, No. 1, is issued on letterhead request to The Indiana Steel Products Co., Dept. CP, Valparaiso, Ind.

1001 uses for meter

"1001 uses for the model 260" obviously deals with uses of volt-ohm-milliammeter. Fifty-page illustrated booklet offers detailed but practical information. "1001 uses" is issued by Simpson Electric Co., Dept. CP, 5200 W. Kinzie St., Chicago 44, Ill. When inquiring specify CP 4440 on handy form, pages 2 and 3.

thousands of users PROVE "HI-TEMP" C-5 THREAD COMPOUND IS BEST FOR ALL STUD THREADS and STAINLESS STEEL APPLICATIONS

- ✓ speeds up dis-assembly time
- ✓ prevents stud breakage
- ✓ eliminates pitting of stainless steel

NO MORE FROZEN OR GALLED STUDS EVEN AT 1800°F

Let us SEND you a FREE SAMPLE

so you can PROVE to YOURSELF that C-5 will lick your toughest stud breakage problems!

To assure easy maintenance on products having threaded assemblies many leading product engineers have specified the use of Fel-Pro C-5 as an anti-seize coating on stud threads prior to final production line assembly. Fel-Pro's exclusive Colloidal-Copper formula allows for easy separation and reduces stud breakage of threaded assemblies after long exposure to extreme temperatures. It eliminates pitting of stainless and alloy steel even where dissimilar metals are joined.

Conduct your own tests with C-5 "Hi-Temp" at our expense. Write for Free Sample and complete data sheet TODAY!

FEL PRODUCTS MFG. CO., 1515 Carroll Ave., Chicago 7, Ill.

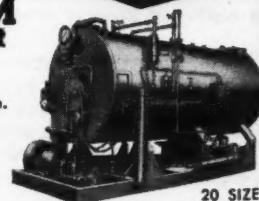
When inquiring check CP 4441 on handy form, pgs. 2-3

1. SET IT ON YOUR CONCRETE FLOOR
2. MAKE SERVICE CONNECTIONS
3. TURN ON THE STEAM!

You Never Saw a UNIT So Easy to INSTALL and OPERATE!

AMESTEAM GENERATOR

- is fully piped and wired.
- needs no special foundation.
- is factory insulated and jacketed.
- has its own refractories.
- needs no heavy, costly stack.



20 SIZES
10 to 600 h.p.
15 to 200# OIL OR GAS

WRITE FOR FREE BULLETIN TODAY!

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IRON WORKS
BOX B-103
OSWEGO, N. Y.

AMES IRON WORKS
Box B-103, OSWEGO, N. Y.

Gentlemen: Please send me further information on AMESTEAM GENERATORS and name of the nearest representative.
NAME.....
COMPANY.....
ADDRESS.....

When inquiring check CP 4442 on handy form, pgs. 2-3

CHEMICAL PROCESSING

Three types of cable conveyors emphasized in bulletin

New bulletin issued by manufacturer shows three different types of power driven cable conveyors.

Two are the overhead trolley type — one is suitable for light and medium loads, another for heavier loads. The third type has 4-wheeled carriers attached at 8, 12, 15 or 16" centers. Carriers can be equipped with pallets, shelved trays, fixtures, rotators and the like to carry a wide variety of parts or assemblies.

In four pages, bulletin contains information on the units including load limits, carrier spacing, beam specifications and other useful data.

Bul 40, "Universal" Cable conveyors is issued by The E. W. Buschman Co., Dept. CP, Spring Grove & Clifton Ave., Cincinnati 32, Ohio. When inquiring specify CP 4443 on handy form, pages 2 and 3.

Hints and suggestions on pump stuffing boxes and packings

In its discussion of pump stuffing boxes and packings, four-page bulletin makes general statement that the chemical and physical properties of liquid to be pumped, speed of shaft to be sealed, pressure, and temperature, are governing factors which determine amount and kind of packing to use. It then goes on to offer hints and suggestions as to what proper packing practices should be. Line drawings illustrate text.

One page of bulletin is devoted exclusively to suggestion for selecting packings for chemical processing pumps.

Bul S-147 is issued by Taber Pump Co., Dept. CP, 288 Elm St., Buffalo 3, N.Y. When inquiring specify CP 4444 on handy form, pages 2 and 3.

Two bulletins give specifications on industrial, lift trucks

Publication of two bulletins covering the "101" Transactor and Hyskid Transporter driver-led electric industrial trucks have been announced by manufacturer. Bul 1003 on the "101" gives specifications for four models of this towing-type unit which will push or pull 6000 lb all day long or handle up to 20,000 lb intermittently.

Bul 1009 describes the Hyskid with either 4000 or 6000 lb capacities for skids of all heights and features a vertical hydraulic lift which raises the platform a net lift of 14½" — from 6½" above the floor in low position to 21" in raised position.

Both bulletins are issued by The Automatic Transportation Co., Dept. CP, 149 W. 87th St., Chicago 20, Ill. When inquiring specify CP 4445 on handy form, pages 2 and 3.



here is Flexible "ZONE CONTROL" with JEFFREY DRYERS and COOLERS

CHECK THESE PROCESSING ADVANTAGES

- Easy to install, inspect, clean.
- Gentle action prevents degradation.
- Slight suspension (direct air type) produces fluffing, fluidizing action.
- Sectionalization gives complete "Zone Control."
- Quiet operation reduces structural vibration.
- Each electronic control plugs into terminal block base for easy servicing and quick replacement.
- Factory wiring eliminates on-job work.
- Ease and speed of repair saves down-time and product loss.
- Minimum power consumption.

Write for Catalog 804.

Inquire about laboratory test facilities or field-test rental service.

Whether your cooling and drying problems are simple or complex — Jeffrey-Traylor electric vibrating equipment will solve them. Each installation is built of standard, pre-engineered units, adapted to the particular job, designed to help produce quality products. Sections operate at different air temperatures, velocities and conveying speeds, giving "Zone Control" in each individual step in the system.

Sectionalization permits intermediate operations — mixing, scalping, crushing. Flexible arrangement in vertical or horizontal U-shape meets all space requirements.

Our laboratories are available to customers for tests free of charge. Pilot-size test-units available for tests under production conditions in a customer's plant.

Visit Booth No. 201 at Chemical Exposition.

JEFFREY ALSO MAKES . . . CONSTANT WEIGHT FEEDERS
MECHANICAL-VIBRATING CONVEYORS • CRUSHERS • ROTARY BIN CHECK VALVES • BARREL PACKERS
BUCKET ELEVATORS • CAR SPOTTERS • POWER SCOOPS • BELT, SPIRAL, SCRAPER, APRON CONVEYORS



THE JEFFREY

MANUFACTURING CO.

Columbus 16, Ohio

sales offices and distributors
in principal cities

PLANTS IN CANADA, ENGLAND, SOUTH AFRICA

IF IT'S MINED, PROCESSED OR MOVED
...IT'S A JOB FOR JEFFREY!

When inquiring check CP 4446 on handy form, pgs. 2-3



RICHMOND super-sifter

**"... doing a better job ..."
in a Wood Flour Mill**

Mr. James B. Stamps, Vice-President, Allen-Rogers Corporation (turned wood products) recently wrote:

"Our new flour mill has been in operation for something over a year now, and we have had an opportunity to observe closely the results which we are obtaining from the sifter, magnets, and stream splitter which we purchased from your company.

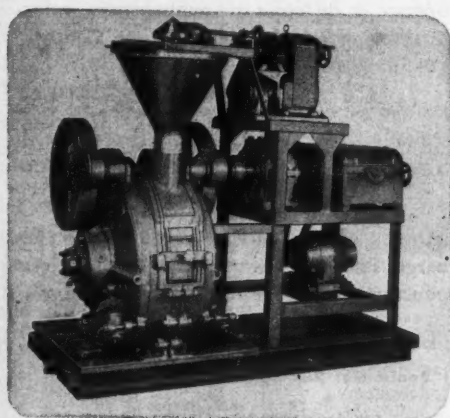
"We are very happy to tell you that in all cases these are performing satisfactorily and are indeed doing a better job than any other similar devices which we have used in the past."

Perhaps your plant can profit from the use of RICHMOND SIFTERS, too.

R-21

RICHMOND MANUFACTURING COMPANY
AFFILIATED WITH NOVADOL-AGENE CORP.
LOCKPORT, NEW YORK

When inquiring check CP 4447 on handy form, pgs. 2-3



"DAVENPORT"

CONTINUOUS PRESSES

All three sizes of "DAVENPORT" Continuous Presses can be furnished in any type of alloyed metal construction . . . ranging from cast iron to stainless steel.

Positive screw feeder attachment shown as a part of the Press is available as an optional feature.

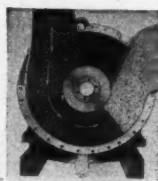
Our engineers will welcome an opportunity to discuss with you the application of these presses to your product.

Write for our complete catalog; or, for quick reference, see your 1953 or '54 Chemical Engineering Catalog.

See us at Booth 443, Exposition at Philadelphia.

**DAVENPORT MACHINE AND
Foundry Company**
DAVENPORT IOWA

Cross Section



Screens and Housing

DAVENPORT
De-Watering
Presses and
Screens
ROTARY
Steam Tube, Hot
Air and Direct Fire
Dryers
Water Tube and
Air Coolers

When inquiring check CP 4448 on handy form, pgs. 2-3

NEW LITERATURE

Time-saving aids for quick safety campaigns

Twenty-page bulletin contains a listing of National Safety Council's Safety Instruction Cards. These are 3 x 5" vertical cards listing safe practices, accepted methods of performing specific operations and other information for workers and supervisors. They are time-saving aids for use in quick campaigns to correct unsafe practices, as passouts for discussion at safety meetings, or for payroll enclosures.

A complete set of all cards, more than 700 in all, consists of the following: Basic Industrial Cards — 464 cards of interest to every industry; Special Industries Cards — apply to specific industries; Non-industrial Cards — on traffic and off-the-job safety.

Service Guide 5.2, Jan. 1, 1953 which contains the card listing is issued by National Safety Council, Dept. CP, 425 N. Michigan Ave., Chicago 11, Ill. When inquiring specify CP 4449 on handy form, pages 2 and 3.

Discusses features of multistage centrifugal blowers, exhausters

Manufacturer's multistage centrifugal blowers and exhausters, built for applications which require air pressure from 1 to 9 psi, or vacuum from 2 to 12 inches of mercury, are discussed in 2-page bulletin. Units are designed to deliver air at a uniform pressure, regardless of variations in volume. Their simplified design and precise construction are said to assure maximum dependability in continuous duty service. They have no gears or similar parts to wear, operate without mechanical noise, and are vibration-free.

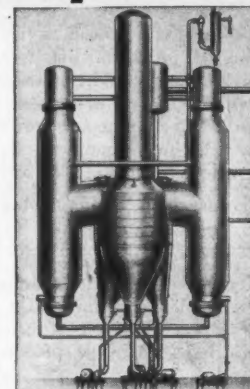
Bul A-932 is available from Air Appliance Div., U. S. Hoffman Machinery Corp., Dept. CP, 105 Fourth Ave., New York 3, N. Y. When inquiring specify CP 4450 on handy form, pages 2 & 3.

Combined advantages offered by jet tray deaerator

Construction features of company's jet tray deaerator (Type K-114) for use in power plants in a wide variety of industries to remove corrosive gases from boiler feedwater, are described in four-page bulletin. Deaerator is said to offer combined advantage of a spray-type, direct-contact, first-stage heater performing as an efficient direct contact vent condenser and primary deaerating mechanism, a second-stage steam jet atomizer, and a final tray-type deaeration section with reboiling action.

Bul 28R7980 is available from Allis-Chalmers Mfg. Co., Dept. CP, 1151 S. 70th St., Milwaukee 1, Wis. When inquiring specify CP 4451 on handy form, pages 2 and 3.

45° to 100° Evaporation



THE Mojonner Lo-Temp Evaporator provides evaporation as low as 45° F. and complete recovery of condensate. Present applications in the Chemical Process Industries include concentration of heat sensitive pharmaceuticals and antibiotics, low temperature fractionation and distillation of solutions, and distillation of flavor extracts and essences. In the Lo-Temp, high pressure ammonia gas is used as the heating medium, and low pressure ammonia is used to condense the vapors from the product. Advantages of this system are:

1. 45° to 100° evaporation, and complete condensate recovery
2. Operating costs 27%-55% less than steam evaporators.
3. Stainless steel sanitary construction.
4. Reduced overall plant electrical costs.
5. Less cleaning cost, less time out of production for cleaning.
6. No water or sewage disposal problems.
7. Less space required for evaporator and auxiliary equipment.
8. No product damage from backfiring of boosters — no boosters are used.
9. No product damage from high evaporating temperatures.
10. Lower overall capital investment in evaporator and auxiliary equipment.
11. Simplified automatic operation, and one man control of evaporator and compressor.

Available in packaged Laboratory Model; Pilot Models; and large capacity Commercial Models. For detailed information, write

MOJONNIER BROS. CO.

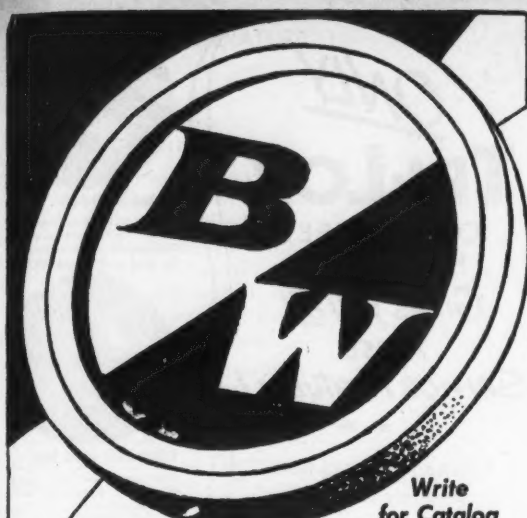
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**LO-TEMP
EVAPORATORS**

OTHER MOJONNIER PRODUCTS FOR THE
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VATS • COLD WALL TANKS • COMPACT
COOLERS • VACUUM FILLS • SPRAY DRYERS
TUBULAR EVAPORATORS

When inquiring check CP 4452
on handy form, pgs. 2-3

CHEMICAL PROCESSING



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Floatless ALL ELECTRIC LIQUID LEVEL CONTROLS

FIRST and FOREMOST
IN THE FLOATLESS
CONTROL FIELD

**B/W CONTROLLER
CORPORATION**

2204 E. Maple Road
Birmingham, Mich.

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Champ Hot Water Team!

JOHNSON

Heater plus steam



It's one of industry's favorite ways to heat water or process liquids of all sorts. Just hook up the Johnson "Instant" Heater to your high pressure steam lines; no reducers needed. Efficient design provides maximum contact between the water and steam-heated surfaces, transfers more heat more rapidly. Whatever your liquid heating job, get the Johnson money-savings facts.

Sizes for all needs; write for literature.



The Johnson Corporation

826 Wood St., Three Rivers, Mich.

When inquiring check CP 4454 on handy form, pgs. 2-3

NEW LITERATURE

Reports on four types of regulating feeders

Four types of regulating feeders, one or more of which satisfy most feeding requirements in all industries where solid materials are handled, are described in 12-page bulletin.

It covers design details, capacities, dimensions, and application of company's constant-weight feeders, weigh-measuring feeders, volumetric belt feeders, disc feeders, and volumetric non-flooding drum feeders.

These feeders are used to control rate of withdrawal of materials from bins or hoppers and discharge them to conveyors or subsequent processing equipment.

Bul 33-E is issued by Hardinge Co., Inc., Dept. CP, York, Pa. When inquiring specify CP 4455 on handy form, pages 2 and 3.

Features fund of facts on wood containers

Complete information on nailed-wood boxes, from "product analysis" to "glossary of box terms", inclusive, is presented in comprehensive brochure. Diagrams, charts, and photographs supplement text. (4 pages, 2 colors).

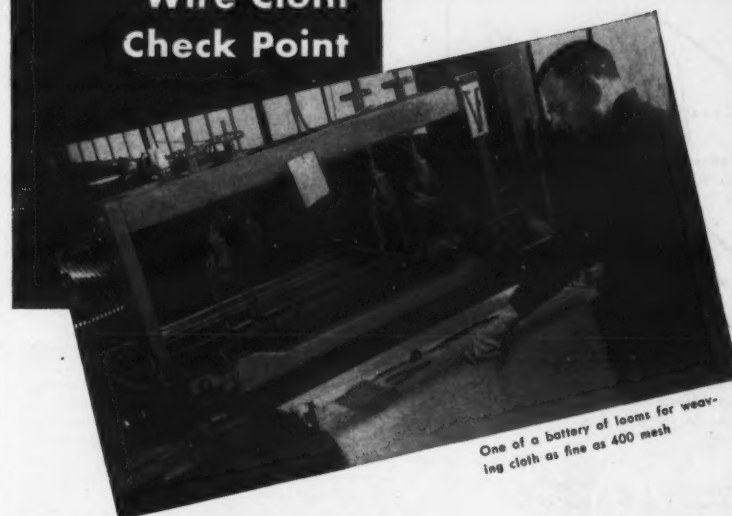
Brochure on Wood Container Facts is issued by The American Box Co., Dept. CP, 1900 W. 3rd St., Cleveland, Ohio. When inquiring specify CP 4456 on handy form, pages 2 and 3.

Propellant containers — production described

Production of propellant containers of various products is described in bulletin. Story of filling and packaging is included and typical layouts of equipment are illustrated. (4 pages).

Aerosol Story Bul is issued on letterhead request to Island Equipment Corp., Dept. CP, 27-01 Bridge Plaza North, Long Island City 1, N. Y.

An Important Wire Cloth Check Point



One of a battery of looms for weaving cloth as fine as 400 mesh

Weaving Precision

Our skilled workmen and precision looms combine to make precision wire cloth that meets the most rigid specifications. All shuttle wires are parallel and all warp wires are parallel as they must be, to assure a uniformly woven cloth with no defects. One or two open

spots in a wire cloth could completely spoil the most painstaking screening operation.

In addition to its uniformity and freedom from imperfections, Newark Wire Cloth is noted for accurate mesh counts. Available in all the commercially used metals, Newark Wire Cloth is woven in sizes ranging from 4 inches (space cloth) down to 400 mesh.

We maintain a large stock of the commonly used metals and sizes, and are in a position to make prompt shipments. Let us quote on your requirements. When writing, please give us details on your process.

Send for our New Catalog E.



Newark Wire Cloth COMPANY

351 VERONA AVENUE • NEWARK 4, NEW JERSEY

When inquiring check CP 4457 on handy form, pgs. 2-3

TROY Angular MIXERS

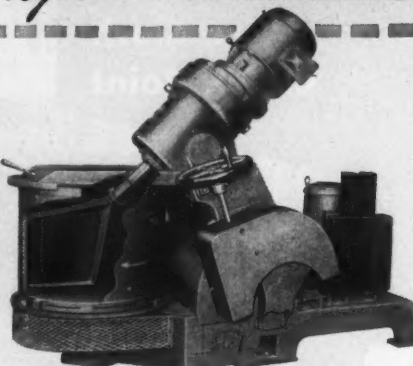
Powerful

the heavy duty mixer that can easily handle pastes, semi-pastes, and very viscous liquids

Efficient

the mixer that provides a unique multi-directional mixing action; agitator arms sweep the side and the bottom tending to turn the material in while raising it; at the same time it folds the material in at the top from side to center.

Our Bulletin GR-51 gives full details of the TROY Angular Mixers. Send for your copy.



We are getting repeat orders from companies that have tried the 40 and 60 gallon TROY Angular Mixers competitively with conventional change tub mixers and found that the TROY Mixer produced better mixing in shorter mixing cycles. Because of the better mix, some of these companies saved not only time in mixing but money in subsequent operations.

If you are looking for a mixer that you hope can do just that in your plant—produce better mixing in shorter mixing cycles—you should investigate the TROY Angular Mixer.



Process Machinery Division

Established 1870

TROY ENGINE & MACHINE CO.

TROY, PENNSYLVANIA, U.S.A.

When inquiring check CP 4458 on handy form, pgs. 2-3

NEW LITERATURE

Design of pump lessens maintenance troubles

Seal-less, leakproof centrifugal pump which is said to practically need no maintenance is described in 4-page bulletin.

It requires no stuffing boxes or lubrication. According to manufacturer, pump is especially well suited for handling corrosive, radioactive, and highly volatile fluids—and for processes where vacuum is used. Information on application of pump and its construction is included with dimension drawings, vacuum performance charts, and performance curves for all models.

Pump is available in capacities to 150 gpm; working pressures to 150 psi; temperature range to 450°F; and are available in sizes of 1/3, 3/4, 1, 2 and 3 hp.

Bul G1000 is issued by Station "A", Chempump Corp., Dept. CP, 1300 E. Mermaid Lane, Philadelphia 18, Pa. When inquiring specify CP 4460 on handy form, pages 2 and 3.

Summarizes specifications for soaps and detergents

Compilation brings together all of the ASTM standards and tentatives pertaining to soaps and detergents. Specifications, methods of test, and definitions are included in booklet.

Contained in publication are 17 specifications for many types of soap and soap products, 9 specifications for various special detergents, and 9 methods of analysis covering soaps and other detergents. Definitions of terms applying to these materials are given.

To obtain "ASTM Standards on Soaps and Other Detergents" remit \$2.25 direct to American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pennsylvania.

Symposium on titanium

Progress made in developing titanium into a widely useful industrial metal is described in a technical report which is com-

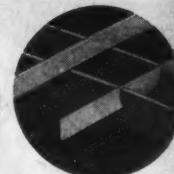
ONLY TRI-LOK OPEN STEEL FLOORING Gives you all these Service Features!

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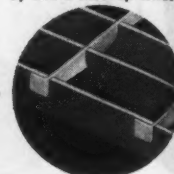
Can be fabricated from a variety of metals

FREE CATALOG

Write today for Bulletin QK-1102



Locked-in Strength
Cross bars are locked in place under 1600 tons pressure. This assures permanent rigidity and a flush top surface.



Clinch-Lock Cross Bars
Bent-over bars lock assemblies into permanent integrated panels.



Self Cleaning
Better than 80% open area assures self cleaning.

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National Distributor for THE TRI-LOK COMPANY
Dravo Building, Fifth and Liberty Aves., Pittsburgh 22, Pa.

When inquiring check CP 4461 on handy form, pgs. 2-3

DESIGN ASSISTANCE

- DEPENDABILITY
- ENGINEERING SKILL
- EXPERIENCE
- ECONOMY

from M & L to You...

The finest Heat Exchange Equipment that top flight materials and Engineering Ingenuity can produce.

You specify the conditions—Our engineers will establish the size, type, material and pressure specifications.

Send for bulletin 810 showing how M & L can help you solve your process equipment problems.

Manning & Lewis Engineering Co.

30 Ogden Street Newark 4, New Jersey

SALES REPRESENTATIVES IN PRINCIPAL CITIES

When inquiring check CP 4459 on handy form, pgs. 2-3

SPRAY NOZZLES

for chemical spraying, cooling, humidifying, dehydrating, and hundreds of other applications

You'll get the right nozzles quicker by calling Binks...manufacturers of one of the most complete selections ever produced. A wide range of spray patterns, sizes, capacities... with nozzles cast or machined from standard or special corrosion-resistant metals.

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Binks

A COMPLETE LINE OF INDUSTRIAL SPRAY NOZZLES AND COOLING TOWERS

When inquiring check CP 4462 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

prised of 8 papers covering various aspects of titanium.

Papers on titanium discuss: history; production properties and uses; physical and mechanical properties; corrosion resistance; shop characteristics; casting and forging; and applications and potential uses. Production status of titanium is also reviewed.

To obtain PB 111083, *Symposia On Materials and Design for Lightweight Construction, The Titanium Seminar*, remit \$2.50 direct to Office of Technical Services, U.S. Dept. of Commerce, Washington 25, D. C.

Complete line of casters and wheels illustrated

Illustrated brochure presents, in eight pages, manufacturer's complete line of casters and wheels for industrial use. It features company's innovation in caster design, the "Lockweld" caster without a kingpin. Single and double ball race swivel casters incorporating this construction are detailed.

Also shown is line of heavy-duty steel casters available in double race swivel and matching rigid type. Data are included on vulcanized rubber-tired roller bearing wheels from 3 to 18".

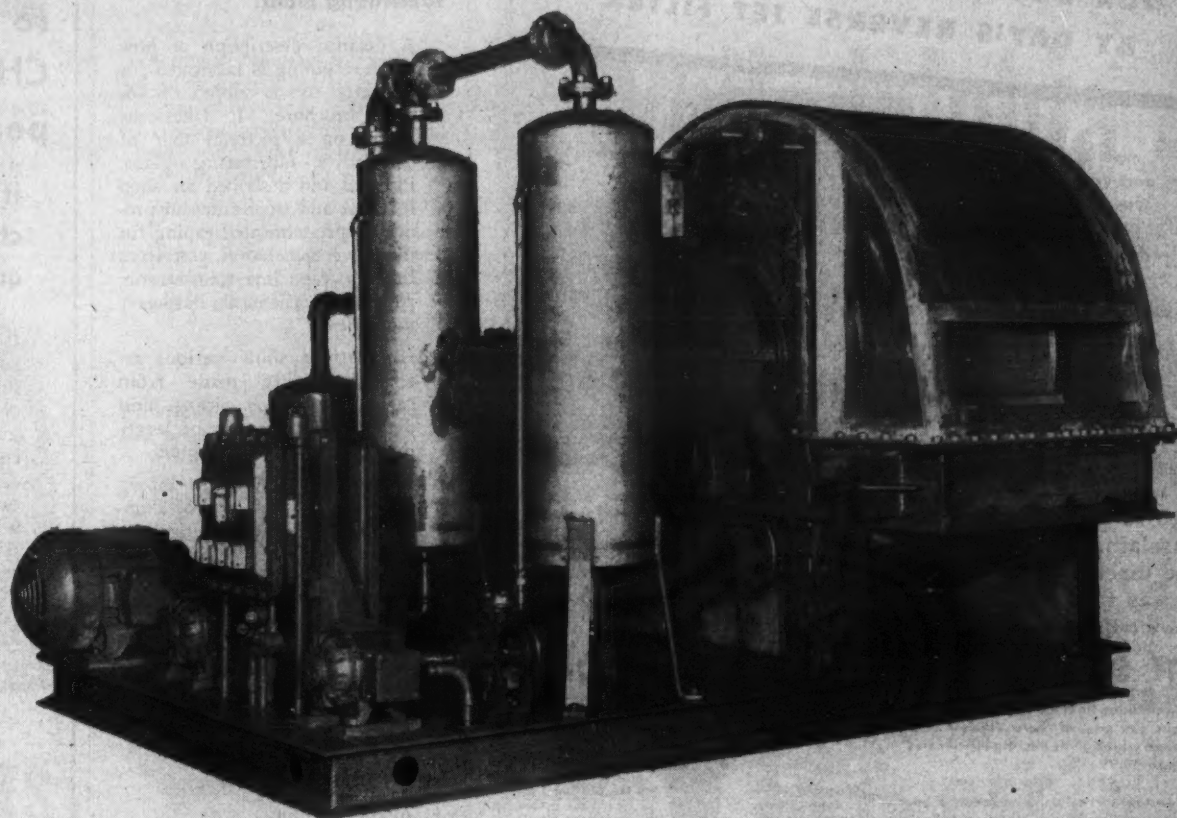
Bul C-1 "Fairbanks Casters and Wheels" is issued on letterhead request to Fairbanks Co., Dept. CP, 393 Lafayette St., New York 3, New York.

Offers a revised edition of lighting spec book

Latest approved specifications for industrial lighting equipment are provided in the 1953 Edition RLM Specifications Book available from RLM Standards Institute, Dept. CP, 326 W. Madison St., Chicago 6, Ill. When inquiring specify CP 4463 on handy from, pages 2 and 3.

For more information on product at right, specify CP 4464
... see information request blank between pages 2-3.

Eimco Pilot Filter Stations Give Accurate Data



The machine pictured above is another example of Eimco custom filter design and construction. The filter is installed in one of the country's large pharmaceutical plants producing antibiotics and the construction incorporates Eimco's popular package unit design.

The filter unit is a 4 foot diameter by 2 foot face size — of all type 316 stainless steel materials with multiple cake washing apparatus, vapor tight hood, roller discharge and other features. The filter with all of its accessories is mounted on a single platform with all piping and valves connected, all electrical wiring

from motors to a central control panel. The unit arrives at the user's plant ready to run.

When your problem involves filtration consult an Eimco engineer first. Our more than half a century of service to the process industries gives us the necessary background to specify and build the proper equipment to do the best job for you at least expense.

Eimco manufactures all types of filtration equipment — our purpose is to suit the best type to your needs whether it be pressure, vacuum, gravity or any combination of these types.

You can't beat an Eimco

EIMCO
THE EIMCO CORPORATION

The World's Leading Manufacturer of Vacuum Filtration Equipment
EXECUTIVE OFFICES AND FACTORIES — SALT LAKE CITY 10, UTAH, U. S. A.

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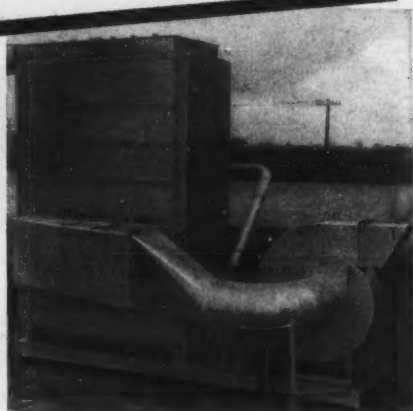
IN FRANCE, SOCIETE EIMCO, PARIS, FRANCE
IN ENGLAND, EIMCO (GREAT BRITAIN) LTD., 1805 12, ENGLAND
IN ITALY, EIMCO ITALIA S.P.A., MILAN, ITALY

"OUR DUST PROBLEM WAS SOLVED BY DAY'S REVERSE JET FILTER"

"... most of our dust is very fine and varies in size from 1 micron to 25 microns. The DAY "AC" (Reverse Jet) Dust Filter solved our problem..."

LAPP INSULATOR COMPANY
LE ROY, NEW YORK

Photo of DAY "AC" Dust Filter installed by Lapp Insulator Company early in 1952.



Before installing their DAY "AC" Dust Filter the Lapp Insulator Company had tried several methods to handle the discharge of dust from their Turning Department, but as they advise... *"on our fine dust the other methods were only about 60 per cent efficient."*

HOW DAY'S REVERSE JET FILTER WORKS

- 1 Continuous Reverse Jet Cleaning permits the use of more efficient filter media which gives filtering efficiencies up to 99.99+%.
- 2 Constant air volumes maintained because of continuous cleaning action.
- 3 Continuous, automatic operation without the necessity of shutting down any section for cleaning.
- 4 Air-to-cloth ratios to as high as 25 to 1, depending on dust being handled.
- 5 The DAY "AC" Dust Filter can be placed on either the pressure side or the vacuum side of the dust fan. Furnished with or without housing.

The DAY "AC", reverse jet, Dust Filter will give you many advantages—if you want to recover product or dispose of dust. Our Bulletin Number 528 contains new information on dust control. Write for it today.



Licensed by H. J. Hersey, Jr.

The DAY Company

852 Third Ave. N. E., Minneapolis 13, Minn.
IN CANADA: P. O. Box 707, Ft. William, Ontario
Branch Plants: Buffalo, Fort Worth, Welland, Ontario



When inquiring check CP 4465 on handy form, pgs. 2-3

NEW LITERATURE

Tour of a pressure piping fabricating plant

A detailed description of how pressure piping is fabricated for industrial use is subject of 16-page brochure. It takes the reader on a pictorial tour of company's fabricating plant. Pictured and described are shop facilities and steps taken in producing pre-fabricated piping for the power generation, petroleum refining, pipe line transmission, paper, steel, chemical, and heavy industries.

Illustrations show various assemblies being made from carbon and alloy piping, and demonstrate bending of large-diameter, heavy-wall pipe.

Booklet "Meet Western Piping Supply" is issued by The Lummus Co., Western Piping Supply Div., Dept. CP, 504 W. 145th St., East Chicago, Ind. When inquiring specify CP 4466 on handy form, pages 2 and 3.

Use of vacuum furnace in processing metals

Four-page bulletin discusses, in some detail, a number of processes being carried out in the three types of vacuum furnaces now being built. Of these processes, perhaps the best known is the Kroll process for refining titanium and zirconium.

Bul 770 is issued by F. J. Stokes Machine Company, Vacuum Equipment Division, Dept. CP, 5500 Tabor Rd., Philadelphia 20, Pa. When inquiring specify CP 4467 on handy form, pages 2 and 3.

Revised catalog lists welding fittings

Revision of company's welding fittings catalog has 36-pages listing products for piping services. Text and illustrations cover WeldOlets, used in butt-welding and socket-welding, and ThreadOlets, used for making threaded outlets. Also included are size and weight data, installation instructions, and a techni-

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*"Substantial operations" does not necessarily mean an extremely large plant. But requests for the magazine exceed supply so we must set standards to insure publication being sent where it can be used to best advantage.

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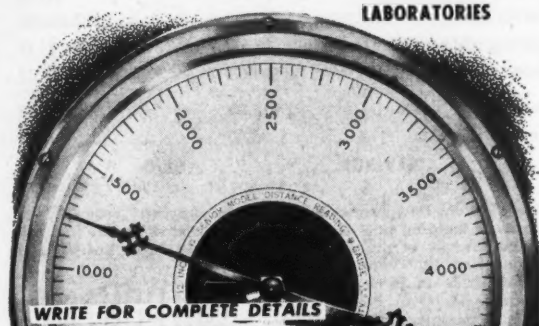
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**"LIQUIDS WORTH STORING
ARE WORTH MEASURING"**

with a
LIQUIDOMETER

Tank Gauge

- FOR GAUGING LIQUIDS
OF ALL KINDS
- 100% AUTOMATIC
- APPROVED BY
UNDERWRITERS'
LABORATORIES



THE **LIQUIDOMETER** CORP.
38-18 SKILLMAN AVE., LONG ISLAND CITY, N.Y.

When inquiring check CP 4468 on handy form, pgs. 2-3

GET COMPLETE FACTS ON GRINDING MILLS

• Pebble Mills • Ball Mills • Rod Mills

Write for this useful 44-page
book, Bulletin 07B6718A. Full
of helpful facts on:

- Grinding media action.
- Mill applications.
- Wet vs dry grinding.
- Grinding circuits.
- Critical mill speeds.
- Grindability indices.



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Milwaukee 1, Wis.

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Attention of: _____
Address: _____
City: _____ State: _____

ALLIS-CHALMERS

When inquiring check CP 4469 on handy form, pgs. 2-3

OCTOBER, 1953

NEW LITERATURE

cal section covering design, engineering, and material specifications.

Reference graphs in technical section make it easy to determine code reinforcing requirements. Temperature-pressure ratings are also listed. Typical installations are illustrated.

Revised catalog W-3 is issued by Bonney Forge & Tool Works, Dept. CP, Allentown, Pa. When inquiring specify CP 4470 on handy form, pages 2 and 3.

Illustrate control devices for pressure and temp

Two separate manuals deal with devices for the control of pressure and temperature, respectively. First of the two bulletins, "Constant Pressure Control," is devoted to explaining effective means of achieving automatic vacuum and pressure control. It describes and illustrates Cartesian Manostats, absolute and differential manometers, McLeod gages, and flowmeters.

"Constant Temperature Control" is a guide to devices of special design for efficient control in this field. It comprises 64 pages of text and illustrations.

The two manuals are issued by The Emil Greiner Co., Dept. CP, 20-26 Moore St., New York 13, N. Y. When inquiring specify CP 4471 on handy form, pages 2 and 3.

Centralized lube system saves time and costs

Complete line of automatic and manual centralized lubrication systems is presented in 20-page bulletin. Text points out time and cost saving applications of systems. Photographs and drawings illustrate operational principles and specifications. Fittings and accessories for systems are also discussed and pictured.

Bul 26 is issued by The Farval Corp., Dept. CP, 3293 E. 80th St., Cleveland 4, Ohio. When inquiring specify CP 4472 on handy form, pages 2 and 3.

This year it's in

Philadelphia

24TH EXPOSITION of CHEMICAL INDUSTRIES

ESTABLISHED 1915

NOV. 30 to DEC. 5
**COMMERCIAL MUSEUM
AND CONVENTION HALL**

Meet and discuss your processing problems with leading technical men of the almost 500 progressive firms in this timely exhibit. Avail yourself of their talents and techniques. Get tailored solutions to your plant problems.

See and compare the newest equipment, from delicate instruments up to large industrial units.

One good idea alone will repay you for the time spent at this great exposition.

PLAN NOW TO ATTEND.

Application forms for hotel accommodations are available by writing to
INTERNATIONAL EXPOSITION COMPANY • 480 LEXINGTON AVENUE, NEW YORK 17, N. Y.

When inquiring check CP 4473 on handy form, pgs. 2-3

NEW!

Model 100



NEPTUNE PROPORTIONING PUMP

Simplex or Duplex
0-12 GPH
Pressures to 300 PSI

READY... the new Neptune Pump which offers three-way economies! First, Model 100 is an astonishingly low-priced Chemical Proportioning Pump. Second, the advanced design delivers efficient and accurate performance. Third, the compact simplicity achieves low maintenance costs. Write for literature.

Simplex
Model 100 S. \$143.00

Duplex
Model 100 D. \$188.00
Motor price additional

NEPTUNE PUMP MFG. CO.
4912 North 6th Street - Philadelphia 20, Pa.

When inquiring check CP 4474 on handy form, pgs. 2-3

SAYS STOP TO SOLIDS



Yarway
Fine Screen Strainers
prevent rust, scale and dirt
from clogging mechanical
equipment. Screens of woven Monel
wire, bodies and screen caps
cadmium plated. Made in 10 sizes—
1/4 to 3". Sold by over 200 industrial
distributors. Bulletin S-203.

YARWAY STRAINERS

YARNALL-WARING CO., 125 Mermaid Ave., Philadelphia 18, Pa

When inquiring check CP 4475 on handy form, pgs. 2-3

NEW LITERATURE

Three-step program for floor maintenance

Since industrial floors take such a beating from heavy traffic, this folder discusses a three-step program for cleaning, sealing, and maintaining floors of all kinds. Steps advised are: 1) remove all imbedded grit, grease, and dirt with a cleaner made especially for the floor being treated; 2) seal floor against future dirt with proper sealer; and 3) protect the cleaned and sealed floor with anti-slip wax.

Folder describes the wide range of company's floor cleaning, sealing, and waxing compounds, and indicates the kinds of floors for which they are formulated.

Folder on Floor Maintenance is issued by West Disinfecting Co., Dept. CP, 42-16 West St., Long Island City, N. Y. When inquiring specify CP 4476 on handy form, pages 2 and 3.

Bulletin describes line of industrial balances

Designed to meet the demand for a balance having a high capacity with a relatively high sensitivity, line of industrial balances are described in an informative bulletin. Among the other items of laboratory equipment discussed are: polyethylene funnels, stirring rods, and scraper spatulas; pipet jars; a utility water bath; duplex heater; penetrometer; wet test meter; and a glassware washer.

"What's New in the Laboratory," No. 18 is issued by Scientific Glass Apparatus Co., Inc., Dept. CP, Bloomfield, N.J. When inquiring specify CP 4477 on handy form, pgs. 2 & 3.

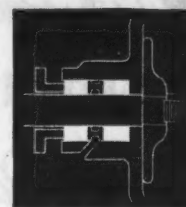
Measuring flows of white water

Illustrated sheet describes technique of metering white water and other liquids containing suspended solids. Application memo 380-K8 is issued by Builders-Providence, Dept. CP, 345 Harris Ave., Providence 1, R. I. When inquiring specify CP 4478 on handy form, pages 2 and 3.

Pump Packing made of Du Pont **TEFLON** saves manufacturer \$870 in 27 months

Here is a typical case history of "Teflon" in process equipment. Consider how this plastic can save money and do a better job for you.

CONDITIONS: Centrifugal pump with 1/2" shaft, handling 98% sulfuric acid at 1750 rpm.



CONVENTIONAL PACKING	"TEFLON"
cost per unit.....\$1.10	\$11.28
service life.....1/2 week	27 months
packing cost per month.....\$8.80	\$.42
labor cost per month.....\$24.00	\$.11
total cost per month.....\$32.80	\$.53
cost for 27 months.....\$886.00	\$14.30
SAVINGS.....\$870	

The Du Pont Polychemicals Department supplies "Teflon" in the forms of molding powder and aqueous dispersions. We'll gladly suggest names of processors of sheets, rods, tubes and finished parts. For full information, write: E. I. du Pont de Nemours & Co. (Inc.), Polychemicals Department, Room 1610, Du Pont Bldg., Wilmington 98, Delaware.



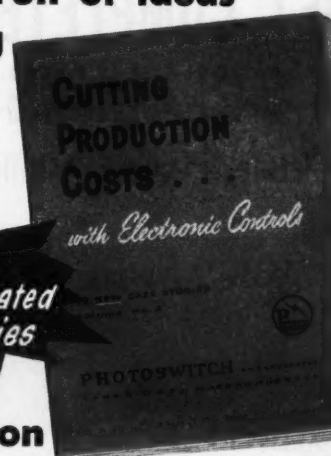
*Trade-mark for Du Pont tetrafluoroethylene resin
BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

When inquiring check CP 4479 on handy form, pgs. 2-3

FREE! Full of ideas for saving with Electronic Controls

45
new illustrated
case studies

1953 Edition



A completely revised edition of the handbook that has become the "bible" of electronic control for thousands of engineers and production executives.

Newly edited, with 45 new case studies showing how standard packaged electronic controls have solved many industrial problems you're likely to meet. It explains clearly and factually, without hocus-pocus, tested ideas for achieving new efficiency through "Electron-eered" counting, weighing, measuring, timing and cycling.

SEND FOR YOUR COPY NOW!

PHOTOSWITCH INC.

Dept. CP 10, 77 Broadway, Cambridge 42, Mass.



When inquiring check CP 4480 on handy form, pgs. 2-3

CHEMICAL PROCESSING

NEW LITERATURE

Shows how needed power can be supplied

Illustrated 8-page bulletin describes series of industrial power supplies for AC lighting and power service up to 112.5 kva at standard voltages to 600 volts. Besides showing much of the available equipment, bulletin explains why voltage should be regulated, and points out advantages of using packaged equipment. Typical specifications for particular applications are included.

(Bul GEA-5928 is issued by General Electric Co., Dept. CP, Schenectady 5, N. Y. When inquiring specify CP 4481, pages 2 and 3.)

Explains function of low cost, heavy duty cleaning method

Comprehensive, 8-page bulletin on hydraulic jet cleaners, operated by ordinary steam and cold water lines, explains function of low cost, heavy duty cleaning method. It also indicates many applications in both the industrial, chemical, and food processing fields.

Bul 424 is available from Sellers Injector Corp., Dept. CP, 1600 Hamilton St., Philadelphia 30, Pa. When inquiring specify CP 4482 on handy form, pages 2 and 3.

Contains table on properties of extruded thermoplastics

Four-page brochure discusses company's extruded thermoplastics and products. It contains a table of properties comparing polyethylene, methacrylate, polystyrene, and fluorocarbons. A second illustrated section shows forms in which the extruded plastics are available, dimensions, surface, color, and primary uses and applications. Standard ASTM methods were used to obtain test values. Brochure entitled "The Plax Extrusion Story" is issued by the Plax Corp., Dept. CP, P.O. Box 1019, Hartford 1, Conn. When inquiring specify CP 4483 on handy form, pages 2 and 3.

Tabulates toggle switches

Eight-page, two-color catalog presents several types of toggle switches and tabulates pertinent information on each. Those pictured include single pole, bushing mounted; single pole, 3 hole mounting; multiple unit assemblies; hermetically sealed assemblies; and "subminiature" assemblies. Cat 73 is available from Micro Div. of Minneapolis-Honeywell Regulator Co., Dept. CP, Freeport, Ill. When inquiring specify CP 4484 on handy form, pages 2 and 3.

HUNDREDS OF TIMES FINER

THAN THE FINEST WIRE MESH . . . A CELITE FILTER CAKE!



With Celite Filtration you are assured perfect clarity

HERE is a clarification method which can remove even the finest suspended solids . . . a Celite* Filter Cake contains more than 2,500,000 filter channels per square inch of surface. Here, too, is a method so flexible that it permits the right balance of fast flow rate and high capacity, with the degree of purity and clarity required.

Celite powders may be used with any type of conventional filter. Only 2 simple steps are required. First, a "pre-coat" of Celite is deposited on the filter medium. Second, small amounts of Celite are added to the solution, to form a con-

tinuously fresh filter surface. To meet different filtration requirements, Celite is available in nine standard grades of microscopically controlled particle size. Utmost uniformity is assured by exclusive processing techniques.

The extraordinary efficiency and flexibility of Celite Filtration have made it the standard for entire industries. For perfect clarity in food products such as jellies, sugar, wine, beer . . . for highest purity in antibiotics . . . for removal of impurities from chemicals, petroleum, dry cleaning solvents . . . Celite offers unequalled advantages.

If you want to improve your present filtration system or find an economical way to utilize filtration in your processing, investigate the Celite method now. One of the Johns-Manville Celite Filtration Engineers will gladly discuss your problem. These men are backed by complete technical services and the Johns-Manville Research Center, largest laboratory of its kind in the world. For further information write Johns-Manville, Box 60, New York 16, N. Y. In Canada, 199 Bay Street, Toronto 1, Ontario.

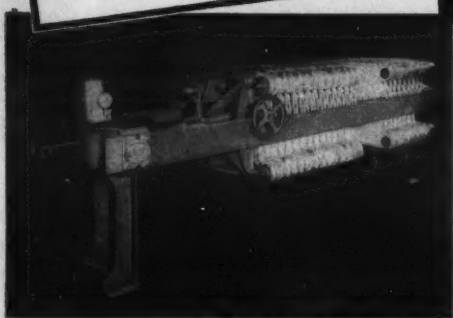
*Celite is Johns-Manville's registered Trade Mark for its diatomaceous silica products.



Johns-Manville CELITE FILTER AIDS

When inquiring check CP 4485 on handy form, pgs. 2-3

4 WAYS TO USE A FILTER



- 1—Filter to Recover Solids reasonably dry, firm, easy to handle.
- 2—Filter to Clarify, Purify, Decolorize, Deodorize, etc.
- 3—Wash or Extract to recover or remove soluble contents in filter cake.
- 4—Steam, Melt or Redissolve the cake.

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When inquiring check CP 4486 on handy form, pgs. 2-3

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NEW LITERATURE

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In addition to a series of photos and sectional views of the pumps, bulletin includes a viscosity conversion table, a viscosity-temperature chart for fuel oils, and shows the relation of A. P. I. hydrometer scale to specific gravity.

Bul W-483-B2 is issued by Reciprocating Pump Div., Worthington Corp., Dept. CP, Harrison, N. J. When inquiring specify CP 4488 on handy Reader Service slip located between pages two and three.

Reviews across-the-line motor starters

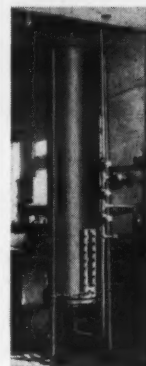
Manufacturer's size 0-3 AC across-the-line motor starters are described in 8-page bulletin. It covers manual and magnetic types of starters, and combination and reversing starters as well as push-button control stations. Operating arrangements are described and three types of enclosures — hazardous dust location, hazardous gas location, and open type — are given.

According to bulletin, all starters are equipped with thermal overload protection devices and magnetic starters can be connected for either low voltage protection or low voltage release. A table shows motor voltage and motor maximum hp (3 phase) applicable to each of four NEMA sizes of starter described.

Bul 14B7132A is available from Allis-Chalmers Mfg. Co., Dept. CP, 1151 S. 70th St., Milwaukee, Wis. When inquiring specify CP 4489 on handy Reader Service slip between pages two and three.

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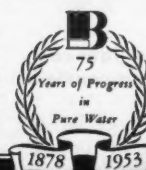
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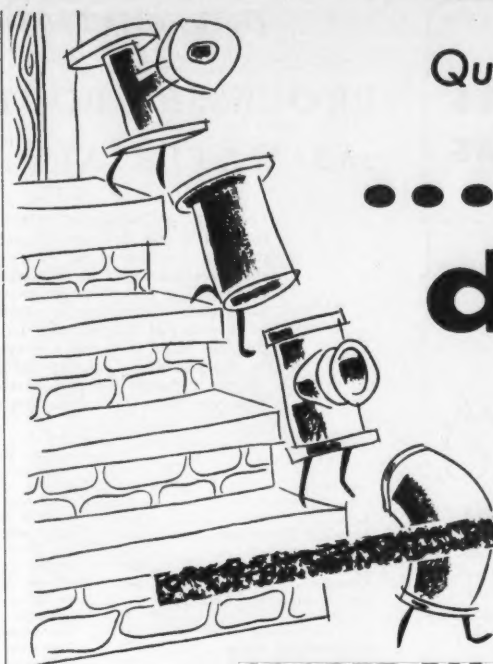
CHEMICAL PROCESSING

Convention & Exhibit

Schedule

1953

- Oct. 6-8. Electric League of Western Pennsylvania, Fourth Industrial Electric Exposition, William Penn Hotel, Pittsburgh, Pa.
- Oct. 8-9. Society of the Plastics Industry, New England section meeting, Equinox House, Manchester, Vermont.
- Oct. 12-16. National Association of Corrosion Engineers, short course on cathodic protection, University of Illinois, Urbana, Ill.
- Oct. 19-23. National Safety Council, 41st National Safety Congress and Exposition, Chicago, Ill.
- Oct. 20-22. Society of Industrial Packaging & Materials Handling Engineers, 8th annual exposition, Mechanics Building, Boston, Mass.
- Oct. 22. American Institute of Chemical Engineers, Hotel New Yorker, New York City, N. Y.
- Oct. 23-24. National Noise Abatement Council, 4th annual Symposium, Armour Research Foundation, Illinois Institute of Technology.
- Oct. 26-27. National Association of Suggestion Systems, annual meeting, William Penn Hotel, Pittsburgh, Pa.
- Oct. 27. Association of Consulting Chemists and Chemical Engineers, Inc., 25th Anniversary Meeting, Hotel Belmont Plaza, New York, N. Y.
- Oct. 28-30. American Management Association, manufacturing conference, Hotel Bellevue-Stratford, Philadelphia, Pa.
- Oct. 29-31. Federation of Paint & Varnish Production Clubs, annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J.
- Nov. 2-4. American Oil Chemists' Society, 27th Fall Meeting, Hotel Sherman, Chicago, Ill.
- Nov. 5-6. Mellon Institute of Industrial Research, 11th annual Pittsburgh Diffraction Conference, Mellon Institute, Pittsburgh, Pa.
- Nov. 17-18. American Institute of Electrical Engineers, conference on recording & controlling instruments, Benjamin Franklin Hotel, Philadelphia, Pennsylvania.
- Nov. 30-Dec. 5. 24th Exposition of Chemical Industries, Commercial Museum & Convention Hall, Philadelphia, Pa.
- Dec. 1-4. National Association of Corrosion Engineers, Central Oklahoma Section, Corrosion Conference, University of Oklahoma, Norman, Oklahoma.
- Dec. 13-16. American Institute of Chemical Engineers, Annual Meeting, St. Louis, Mo.



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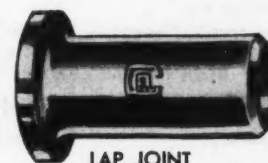
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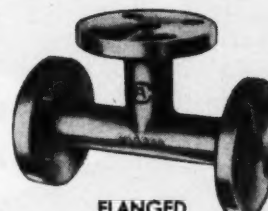
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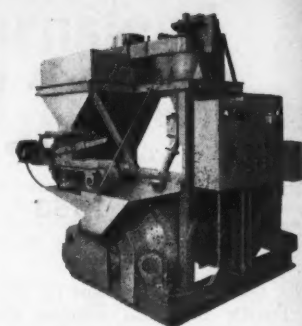
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PROCESSES, EQUIPMENT and MATERIALS

Use this "quick-locator" when you want information on a specific type of process, equipment or material mentioned in the processing stories or the advertisements in this magazine. Everything discussed in this issue is given here, if you want more data you can write manufacturer direct . . . or turn to pgs. 2-3 and use the handy "Information Request Slip." This is a special service provided by the publisher . . . no obligation or charge, of course. The publisher contacts the proper manufacturers for you—information comes to you direct.

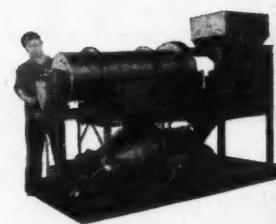


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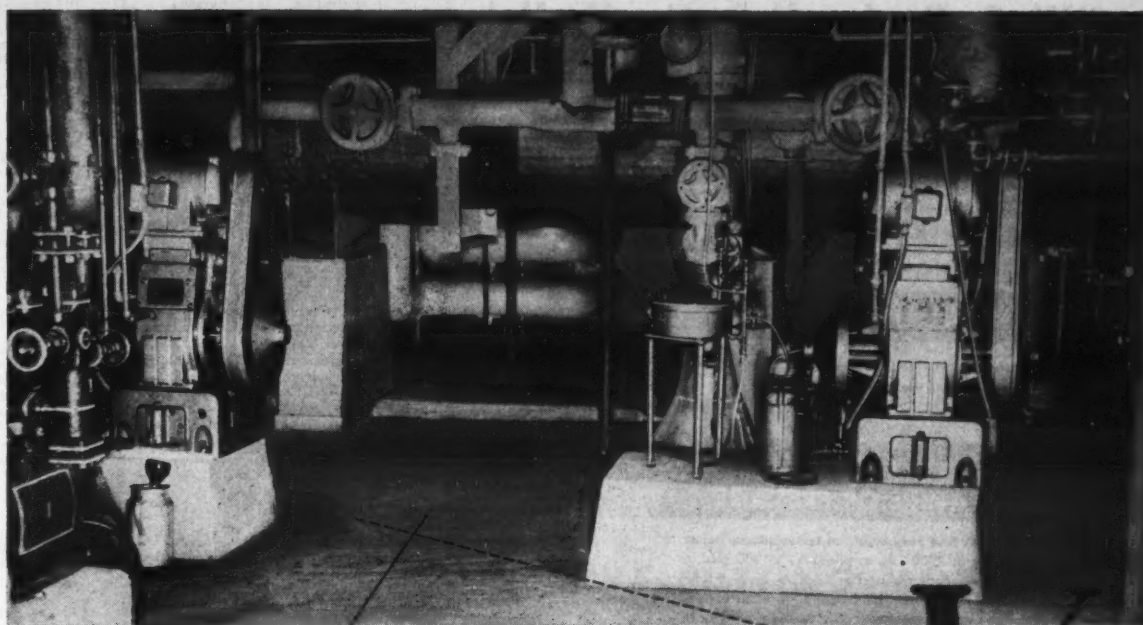
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Stokes Microvac Pumps in machine room at Research Laboratories, Inc., St. Joseph, Mo., including diffusion type booster pump, condenser, and oil clarifier. Note relatively small size of the Stokes 8" Vacuum Valve (top-center) compared with other 6" vacuum valves at right and left.

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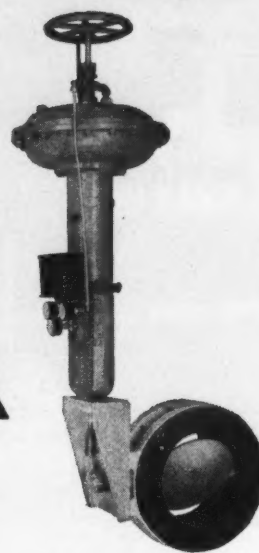
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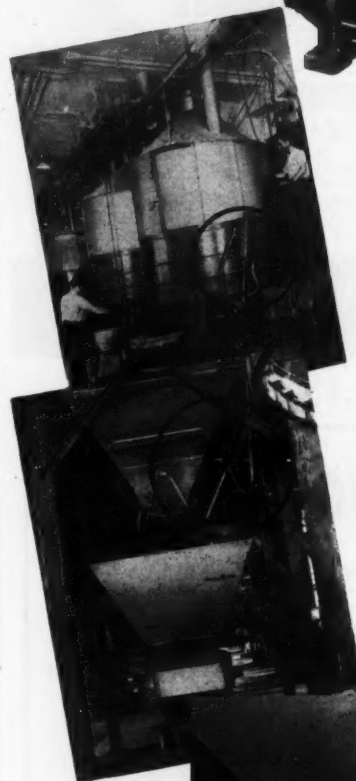
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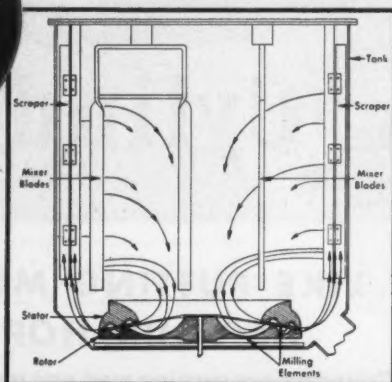
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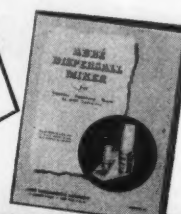


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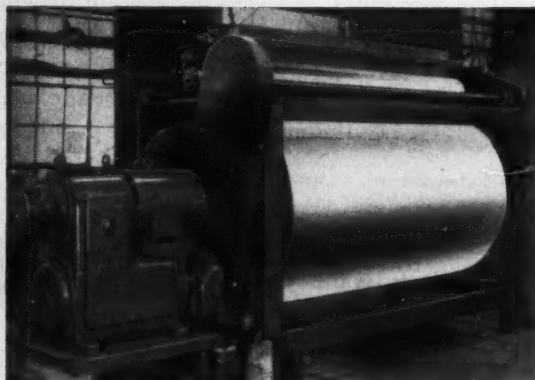
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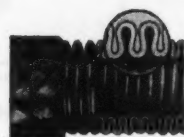
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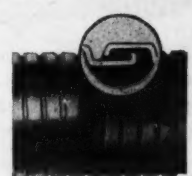
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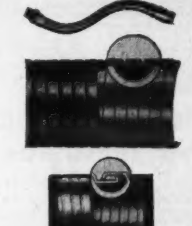
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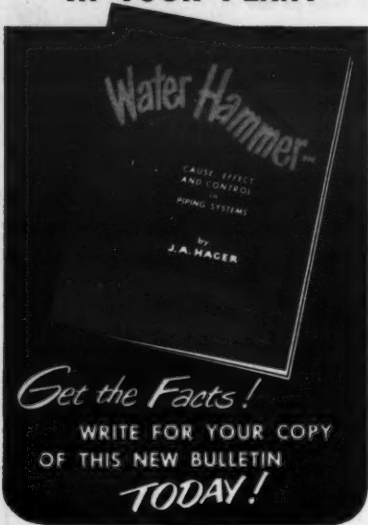
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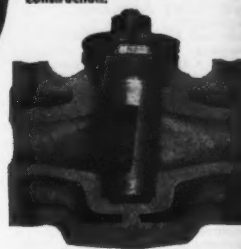
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Below: Cutaway section of Jack-
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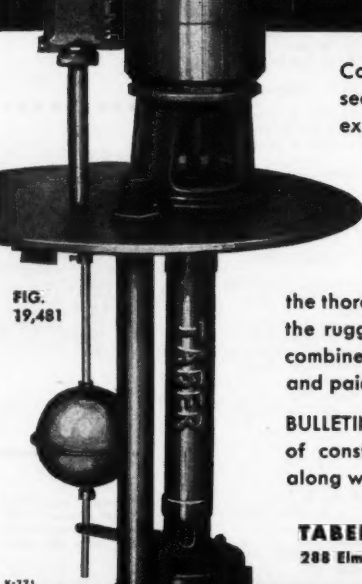


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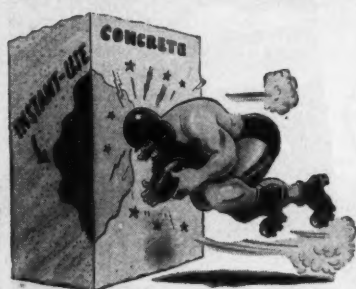
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When inquiring check CP 4512 on handy form, pgs. 2-3

CHEMICAL PROCESSING

"That's Interesting"

Life fluids — and the Geiger counter

Radioactive iodinated blood albumin (a product of Abbott Laboratories, North Chicago, Ill.) plus a Geiger counter is aiding physicians in diagnosing amounts of blood and other life fluids that should be replaced in the body in cases of burns and shock.

To make the diagnosis, the physician first injects the harmless radioactive iodo-albumin into the patient's veins and, a few minutes later, withdraws a blood sample. He then uses an ordinary Geiger counter to measure the radioactivity of the sample. This indicates how much albumin has been diluted in the bloodstream and, consequently, how much fluid needs to be replaced in the body.

Floating rope

So buoyant that it floats, lightweight plastic rope (made of DuPont's polyethylene, by Plastic Rope Co., Inc., Redwood City, Calif.), is being used for heaving, anchor, and life lines for boats. Its non-absorbency and acid-resistance also qualify it for other uses where rope or heavy cord may contact water or chemicals.

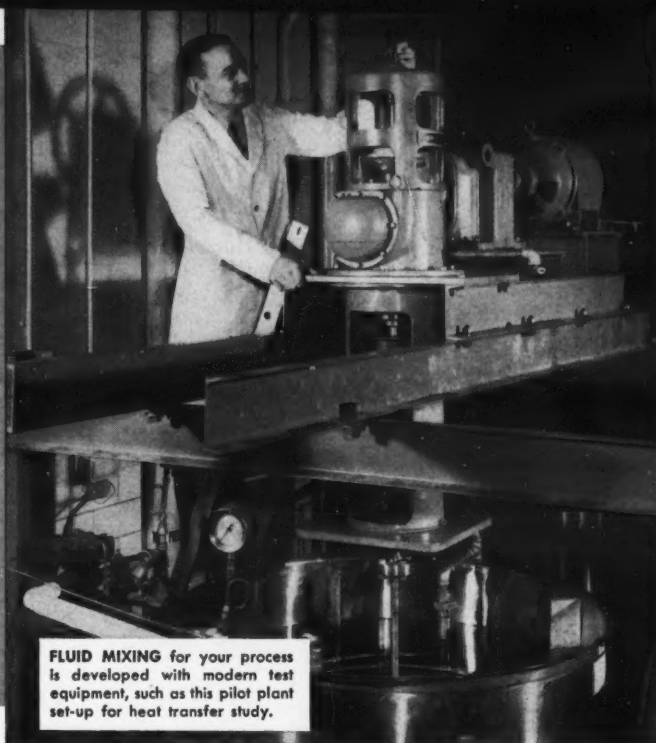
Heavy foot?

A little light on the dashboard of the family auto can now tell you, or the wife, when you are over-accelerating and wasting gas. Easily installed unit is worked by a vacuum switch mounted on the intake manifold. Maybe you can get 35 miles to a gallon of gas by watching that light. (Gould Battery News)

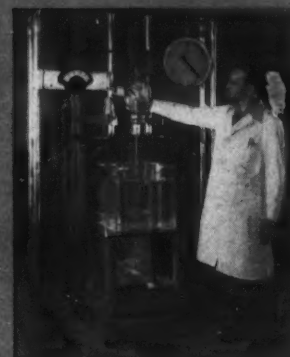
Diaper rash defied

Recent clinical data released by a leading pediatrician has shown that DL-methionine can cure certain types of diaper rash which result from a metabolic upset in nitrogen equilibrium in baby's system. Addition of the chemical to the infant's formula restores nitrogen balance and does away with rash in a week or ten days. (U.S.I. Chemical News)

For more information on product at right specify CP 4513 . . . see information request blank between pages 2-3.



FLUID MIXING for your process is developed with modern test equipment, such as this pilot plant set-up for heat transfer study.



IMPELLER FLUID REGIME is studied by means of ultra-high-speed motion pictures, to determine optimum balance of flow and shear.



PILOT AND SEMI-WORKS testing is done in tanks as large as 70,000 gallons. Big test equipment helps to insure scale-up accuracy.

How to be *SURE* of fluid mixing results

Don't be satisfied with "just average" fluid mixing.

There's a tremendous bonus in having the mixing researched and engineered to fit your process.

You can often get sensational time savings—cut process time down from hours to minutes.

Correct mixing can give you tight control of a critical process. Control of dissolving rate, gas bubble size, crystal size, heat transfer coefficients.

You can often combine mixing operations—stack up a series of tanks into a vertical column to save plant space, process time, equipment cost.

THESE SERVICES COST YOU NOTHING At Mixco you'll find:

1. A large staff of engineers who specialize in fluid mixing.
2. Detailed data on thousands of successful mixer installations.
3. Scale-up methods that are guaranteed accurate.
4. Full guarantee of successful results.

You can save many months by using these unique engineering facilities, without cost or obligation. Write us today for full details about engineered fluid mixing and what it can do for you.

Lightnin® Mixers

MIXING EQUIPMENT Co., Inc.

185 Mt. Read Blvd., Rochester 11, N. Y.

In Canada: William & J. G. Greey, Ltd., Toronto 1, Ont.

- ☐ DH-50 Laboratory Mixers
- ☐ B-75 Portable Mixers (electric and air driven)
- ☐ B-102 Top Entering Mixers (turbine and paddle types)
- ☐ B-103 Top Entering Mixers (propeller type)
- ☐ B-104 Side Entering Mixers
- ☐ B-105 Condensed Catalog (complete line)
- ☐ B-107 Mixing Data Sheet

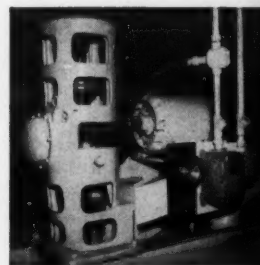
Please send me the catalogs checked at left.

Name _____ Title _____

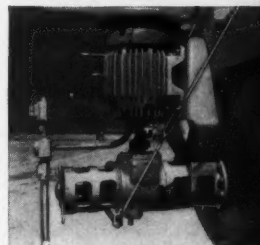
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TOP ENTERING — turbine and paddle types. Sizes 1 to 500 HP.



SIDE ENTERING — propeller type. Sizes 1 to 25 HP.



PORTABLE — electric or air driven. Sizes 1/8 to 3 HP.

MIXCO fluid mixing specialists



Illustration courtesy of
The Murray Corp., Detroit

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then you'll realize that NEVILLE plays an important part
in the production of many household items, whether it's
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